N42237.AR.000483
NSB KINGS BAY
5090.3a

WORK PLAN FOR GROUNDWATER REMEDIATION AT SITE 11 NSB KINGS BAY GA
5/1/2001
CH2M HILL

Work Plan No. 2

Revision No. 00

Groundwater Remediation at Site 11, Old Camden County Landfill

Naval Submarine Base Kings Bay

Kings Bay, Georgia

Contract No. N62467-98-D-0995
Contract Task Order No. 0047

May 2001

PREPARED FOR

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

NSB Kings Bay Administrative Record
Document Index Number

31547-000
19.49.00.0023

Work Plan No. 02
Groundwater Remediation at Site 11
Old Camden County Landfill

Naval Submarine Base Kings Bay
Kings Bay, Georgia

Revision No. 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0047

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

May 2001

Table of Contents

Tables

Figures

Appendices

Acronym List

AFCEE	Air Force Center for Environmental Excellence
ACO	Administrative Contracting Officer
BEI	Bechtel Environmental, Inc.
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CFR	Code of Federal Regulations
CO	Contracting Officer
CPM	Critical Path Method
CTO	Contract Task Order
DCE	Dichloroethene
GC	gas chromatography
J.A. Jones	J.A. Jones Environmental Services Company
MIP	membrane interface probe
MSDS	Material Safety Data Sheets
$\mu g/L$	micrograms per liter
NAVFAC	Naval Facilities Engineering Command
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NSB	Naval Submarine Base
NTR	Navy Technical Representative
PCE	Tetrachloroethene
POTW	publicly-owned treatment works
ppb	parts per billion
PPE	personal protective equipment
QA	Quality Assurance
QC	Quality Control
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SOPs	standard operating procedures
T&D	Transportation and Disposal
TCE	Trichloroethene
TCLE	total chlorinated ethenes
TOC	total organic carbon
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VC	Vinyl chloride
VOC	volatile organic compound

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) with J.A. Jones Environmental Services Company (J.A. Jones) have been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (NAVFAC), to prepare this site-specific Work Plan, under Response Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0047. The purpose of this Work Plan is to outline the procedures to be used to perform groundwater remediation at Site 11, Old Camden County Landfill (Site 11) located at Naval Submarine Base (NSB) Kings Bay, Georgia.

The scope of work under this CTO is to perform groundwater remediation in the delineated source area at Site 11 utilizing Fenton's reagent chemical oxidation injection followed by an injection of vegetable oil into the subsurface.

This Work Plan is organized into six sections of text and five appendices as follows.

Section 1.0 Introduction includes the site history, a summary of the source area delineation effort, and the project objectives.

Section 2.0 Project Execution Plan details the required scope of work, the project schedule, the communications plan, and the traffic control plan. A detailed project schedule is provided in Appendix A.

Section 3.0 Sampling and Analysis Plan (SAP) provides project sample locations, sample collection frequency, and the required laboratory analyses for samples collected during project activities.

Section 4.0 Waste Management Plan discusses the characterization, disposal, onsite management, and transportation of wastes (i.e., decontamination water, etc.) encountered or generated during project activities. Waste management forms are provided in Appendix B of CTO No. 0047 Work Plan No. 01 (CCI, August 2000).

Section 5.0 Environmental Protection Plan of CTO No. 0047 Work Plan No. 01 addresses environmental protection for all work completed at NSB Kings Bay.

Section 6.0 Quality Control (QC) **Plan** of CTO No. 0047 Work Plan No. 01 addresses QC for all work completed at NSB Kings Bay. The site-specific project organization for this CTO is included in Section 6.0 Quality Control Plan of this Work Plan No. 02. The Submittal Register and Testing Plan and Log for this phase of the CTO are provided in Appendices B and C, respectively. Additional project QC documents are provided in Appendix C of the CTO No. 0047 Work Plan No. 01.

The **Site Health and Safety Plan**, provided as a standalone document in Appendix D, addresses project-specific health and safety issues for the remediation activities to be completed at NSB Kings Bay.

Source delineation analytical and membrane interface probe results are provided in Appendix E.

1.1 Site History and Project Objectives

NSB Kings Bay occupies approximately 16,168 acres in Camden County, Georgia. Site 11 is identified as the Old Camden County Landfill, which is now incorporated in NSB Kings Bay. The Old Camden County Landfill was used for municipal solid waste disposal in the 1960s and 1970s. Waste was disposed of by digging trenches, filling the trenches with waste, and then backfilling the trenches with fill. Tetrachloroethene (PCE) was disposed in the landfill at some point during waste disposal activities, which resulted in groundwater contamination at the site. The contaminants of concern at Site 11 include chlorinated volatile organic compounds (VOCs), specifically PCE, and its degradation constituents trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC).

Bechtel Environmental, Inc. (BEI), with Geo-Cleanse International, Inc., performed three phases of chemical oxidation treatment during August 1998 through April 2000. During the entire treatment program, a total of 54 injectors were installed and an approximate total of 34,850 gallons of 50 percent hydrogen peroxide and an equivalent amount of ferrous iron catalyst were delivered to the subsurface.

Phase I chemical oxidation treatment was performed from August 1998 through February 1999. Because of a concentration increase in three piezometers and Injector I-14 following Phase I treatment, BEI conducted a cone penetration testing program in April 1999 to confirm and delineate the horizontal extent of dissolved groundwater contamination.

Phase II chemical oxidation treatment was performed from May 1999 to July 1999 on areas east and west of the Phase I area of concern. Because of a concentration rebound in Injector I-14 following the Phase II treatment, BEI conducted a Geoprobe investigation in August 1999 to investigate and locate the potential new source of PCE at Injector I-14. Excavation of the suspected source area near Injector I-14 was conducted in September 1999. The excavation yielded several 5-gallon containers, one containing a gray-colored, paint looking waste, and one approximate 20-gallon container containing a black sludge type waste. Analysis of the black waste showed PCE with the highest concentration of all compounds tested.

Phase III chemical oxidation treatment was performed from January 2000 to April 2000 on the delineated source area southeast of Injector I-14. Based on the analytical results from the post-Phase III sampling event conducted on May 30, 2000, a source area of PCE contamination appeared to remain beneath the Phase III injectors.

The post-Phase III sampling event analytical results are summarized in Table 1-1.

TABLE 1-1
Post-Phase III Sampling Event Analytical Results

	Concentration in micrograms per liter (μg/L)				
Injector ID	PCE	TCE	cis-1,2-DCE	VC	Total Chlorinated Ethenes (TCLE)
I-11	170.0	7.0	6.5I	5U	177.0
I-12	47.0	1.8I	1U	1U	47.0
I-13	41.0	5U	5U	5U	41.0
I-14	32.0	2.8	1.6I	1U	34.8
I-18	99.0	1.6I	1U	1U	99.0
I-24	13.0	1.4I	1.3I	1U	13.0
I-25	81.0	1U	2.0	1U	83.0
I-26	49.0	1U	1.5I	1U	49.0
I-60	10,000.0	100U	100U	100U	10,000.0
I-61	820.0	20U	20U	20U	820.0
I-62	120.0	5U	5U	5U	120.0
I-63	130.0	5U	5U	5U	130.0
I-64	92.0	5U	5U	5U	92.0
I-65	210.0	5U	5U	5U	210.0
I-66	260.0	5U	5U	5U	260.0
I-67	72.0	5U	5.2I	5U	72.0
I-68	4.0	1U	1U	1U	4.0
I-69	36.0	1.8I	1U	1U	36.0

U denotes compound was analyzed for but not detected to the level shown.
μg/L – micrograms per liter
I denotes analyte detected; however, the value is between the method detection limit and the practical quantitation limit.

1.2 Source Area Delineation Effort

A source area delineation effort was conducted by CCI/J.A. Jones from November 6, 2000, through January 12, 2001, to delineate the horizontal and vertical extent of the potential source area PCE contamination (and its degradation products) beneath the Phase III chemical oxidation treatment injectors.

1.2.1 November 6 - 21, 2000 Source Area Delineation Effort

From November 6 - 21, 2000, the source area delineation effort was completed utilizing a membrane interface probe (MIP)/Geoprobe rig with an onsite mobile laboratory. The MIP technology was utilized to provide a vertical profile of the subsurface on a horizontal 10-foot grid from Injector I-60. The MIP is pushed into the ground using the Geoprobe rig at a rate of 1 foot per minute. A soil conductivity sensor on the probe continuously logs the changes in the subsurface conductivity. A thermister on the probe heats the surrounding soil and water, which volatilizes the contaminants causing them to migrate across a permeable membrane and into the probe. A carrier gas transports the volatilized gases to a lab-grade gas chromatograph (GC) at the surface. The GC results log continuously into a computer and display real time. The MIP data was used to determine the groundwater sample collection locations and intervals. The groundwater sample collection locations are shown on Figures 1-1 and 1-2 and the MIP data and groundwater sample collection intervals and onsite mobile laboratory analytical results are summarized in Table 1-2. The MIP data and onsite mobile laboratory analytical results are provided in Appendix E.

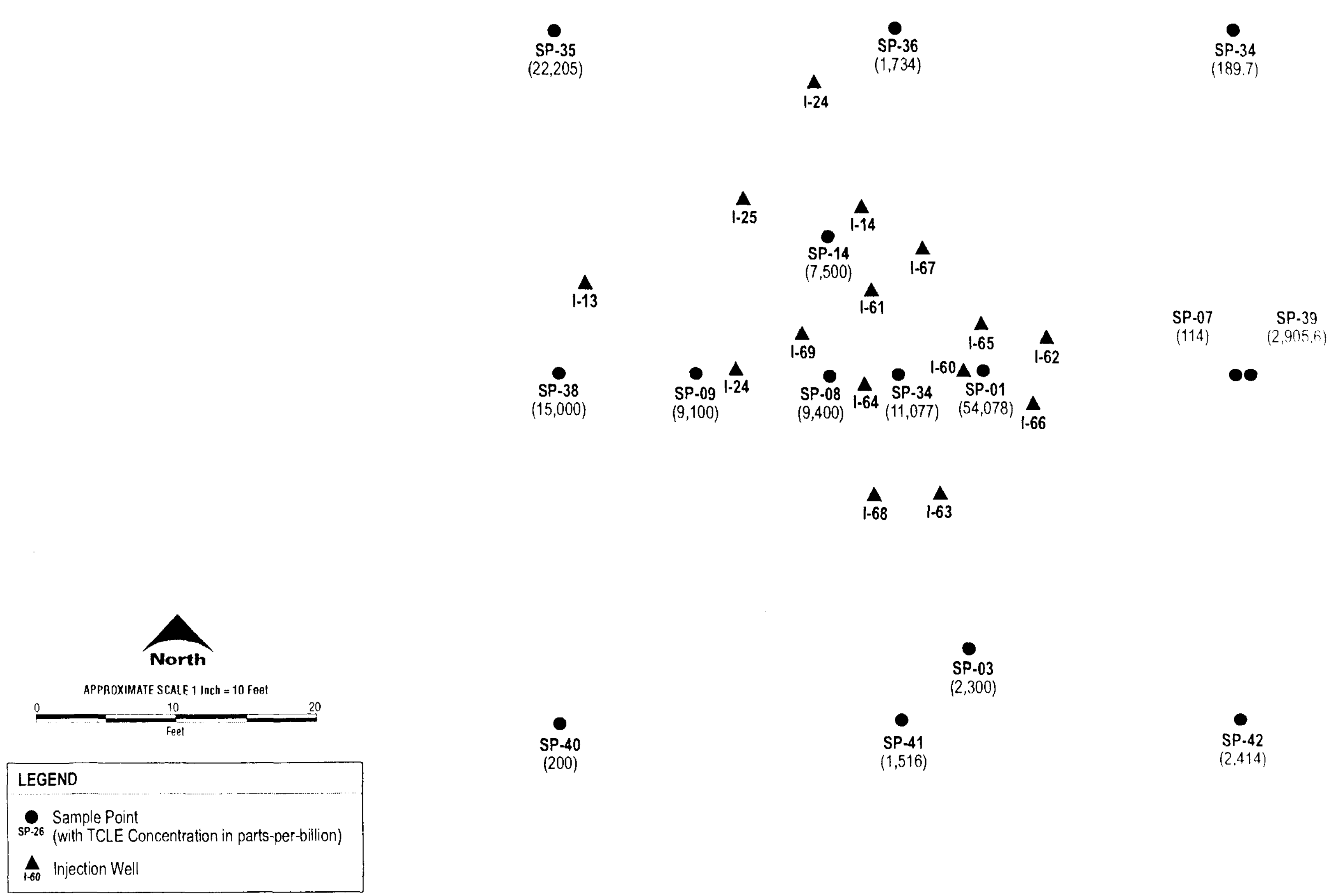
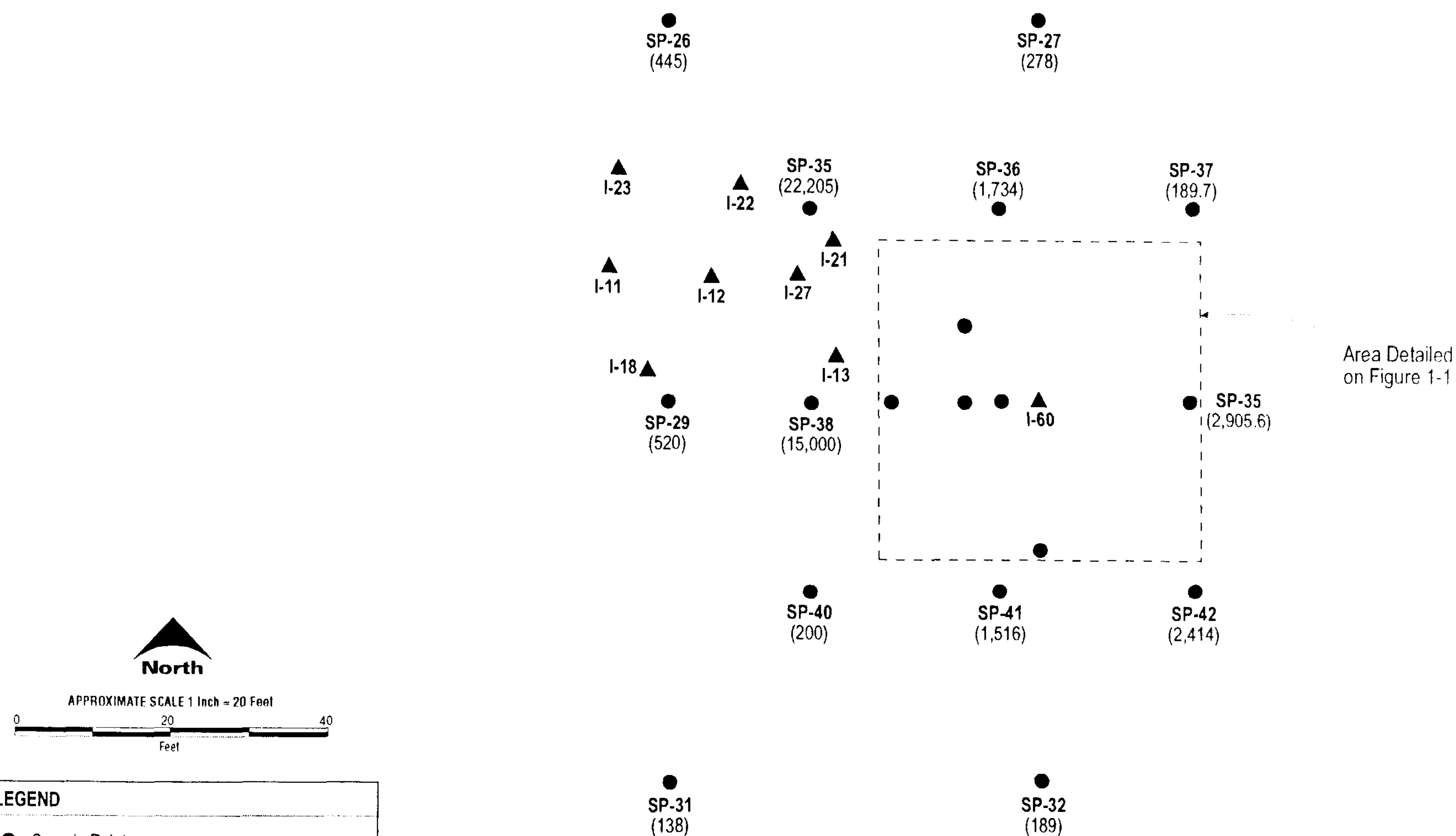


Figure 1-1
Source Area Delineation Site Plan No. 1
NSB Kings Bay, Georgia

CH2MHILL
A052001004AT...sBay100.FH8



LEGEND

- SP-26 Sample Point (with TCLE Concentration in parts-per-billion)
- I-60 Injection Well

Figure 1-2
Source Area Delineation Site Plan No. 2
NSB Kings Bay, Georgia

TABLE 1-2
November 6 – 12, 2000 Source Area Delineation Results

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs	Maximum MIP Reading (uV)
		VC	Cis-1,2-DCE	trans-1,2-DCE	TCE	PCE			
SP-01	20 to 24	<2	17	<2	24	61	102	102	1.6E+7/3.7E+6
	36 to 40	<2	15	<2	19	180	214	214	1.60E+07
	40 to 44	<2	<2	<2	19	550	569	569	3.80E+06
	44 to 48	<2	7	<2	46	54,000	54,053	54,078	5.80E+06
	48 to 52	<2	45	<2	4	790	839	857	1.50E+06
	52 to 56	<2	40	<2	<2	8	48	90	--
	56 to 60	<2	3	<2	<2	2 J	5	27	--
SP-03	35 to 39	<200	<200	<200	<200	2,300	2,300	2,300	4.30E+06
SP-07	44 to 48	<2	71	<2	<2	2 J	73	114	--
	48 to 52	<2	44	<2	<2	1 J	45	102	--
SP-08	44 to 48	<200	<200	<200	<200	9,400	9,400	9,400	1E+7/3.5E+5
	48 to 52	<20	48	<20	<20	2,900	2,948	3,019	1E+7/2.5E+5
	52 to 56	<2	27	<2	<2	4	31	61	--
	56 to 60	<2	13	<2	<2	1 J	14	37	--
SP-09	44 to 48	<200	<200	<200	<200	9,100	9,100	9,100	2.40E+06
	48 to 52	<200	<200	<200	<200	150 J	150	150	1.50E+06
SP-14	44 to 48	<200	<200	<200	<200	7,500	7,500	7,500	4.80E+06
	48 to 52	<20	22	<20	<20	950	972	972	6.50E+06
	52 to 56	<2	17	<2	<2	1 J	18	47	--
SP-26	44 to 48	<20	15 J	<20	<20	430	445	445	--
SP-27	44 to 48	<20	100	<20	<20	100	200	278	--
	48 to 52	<2	17	<2	<2	<2	17	42	--
SP-29	44 to 48	<200	<200	<200	<200	300	300	300	--
	48 to 52	<200	<200	<200	<200	520	520	520	--
SP-31	44 to 48	<2	25	<2	<2	<2	25	80	--
	48 to 52	<2	43	<2	1 J	<2	44	138	--
SP-32	36 to 40	<2	<2	<2	<2	<2	--	15	--
	41 to 45	<2	3	<2	<2	<2	3	47	--
	46 to 50	<2	58	<2	<2	<2	58	189	--

Notes:
J: J qualifier denotes the concentration is estimated.
bls: below land surface
DCE: Dichloroethene
TCE: Trichloroethene
PCE: Tetrachloroethene
TCLE: Total Chlorinated Ethenes
VOCs: Volatile Organic Compounds
MIP: Membrane Interface Probe
uV: microvolts
All concentrations reported in micrograms per liter (μg/L), unless otherwise noted.
TCLE is defined as the summation of PCE, TCE, DCE, and Vinyl Chloride.
Total VOCs is defined as the sum of all detected constituents by USEPA Method 8021B.

Initially, groundwater samples were collected on a horizontal 10-foot grid from Injector I-60, but based on the initial groundwater sample analytical results, the spacing was increased to a 50-foot grid to locate a "clean" boundary. Groundwater samples were collected from each boring using the Geoprobe rig with peristaltic sampling pump and analyzed by the onsite mobile laboratory for U. S. Environmental Protection Agency (USEPA) SW-846 Method 8021B. Each boring was abandoned immediately following MIP boring or groundwater sample collection by sealing the boring with grout from the bottom of the boring to the ground surface using a tremie pipe.

Based on the groundwater sample analytical results collected during this initial effort, the vertical interval of contamination in the source area was determined to be from 44 to 48 feet below land surface (bls); however, additional groundwater collection sampling and analysis was determined to be necessary to delineate the horizontal extent of contamination.

1.2.2 January 8 - 12, 2001 Source Area Delineation Effort

From January 8 through 12, 2001, the source area delineation effort was completed utilizing a Geoprobe rig with an offsite laboratory. Groundwater samples were collected on a 25-foot grid centered 5 feet to the west of Injector I-60, with samples collected from each of nine borings at depths of 36 to 40 feet bls, 40 to 44 feet bls, 44 to 48 feet bls, and 48 to 52 feet bls and analyzed by an offsite laboratory for USEPA SW-846 Method 8021B.

The groundwater sample collection locations are shown on Figures 1-1 and 1-2 and the groundwater sample collection intervals and offsite laboratory analytical results are summarized in Table 1-3. The offsite laboratory analytical results are provided in Appendix D. Each boring was abandoned immediately following groundwater sample collection by sealing the boring with grout from the bottom of the boring to the ground surface using a tremie pipe.

In addition to the above delineation effort, Injector I-60 was sampled on February 7, 2001, and analyzed by an offsite laboratory for USEPA SW-846 Method 8021B. The offsite laboratory analytical results for this event are provided in Appendix D, and the results are summarized in Table 1-3.

This delineation effort, along with the initial effort, provided sufficient data to determine the horizontal extent of contamination and the area requiring remediation. The data collected during the delineation efforts is consistent with a small amount of contaminate mass remaining in the subsurface. Based on the site studies to date, natural attenuation processes are working faster than the groundwater contaminates are migrating, however, the development of a chemical oxidation/vegetable oil injection strategy through the use of the source area delineation analytical results is an aggressive action to quickly achieve the groundwater remedial goals.

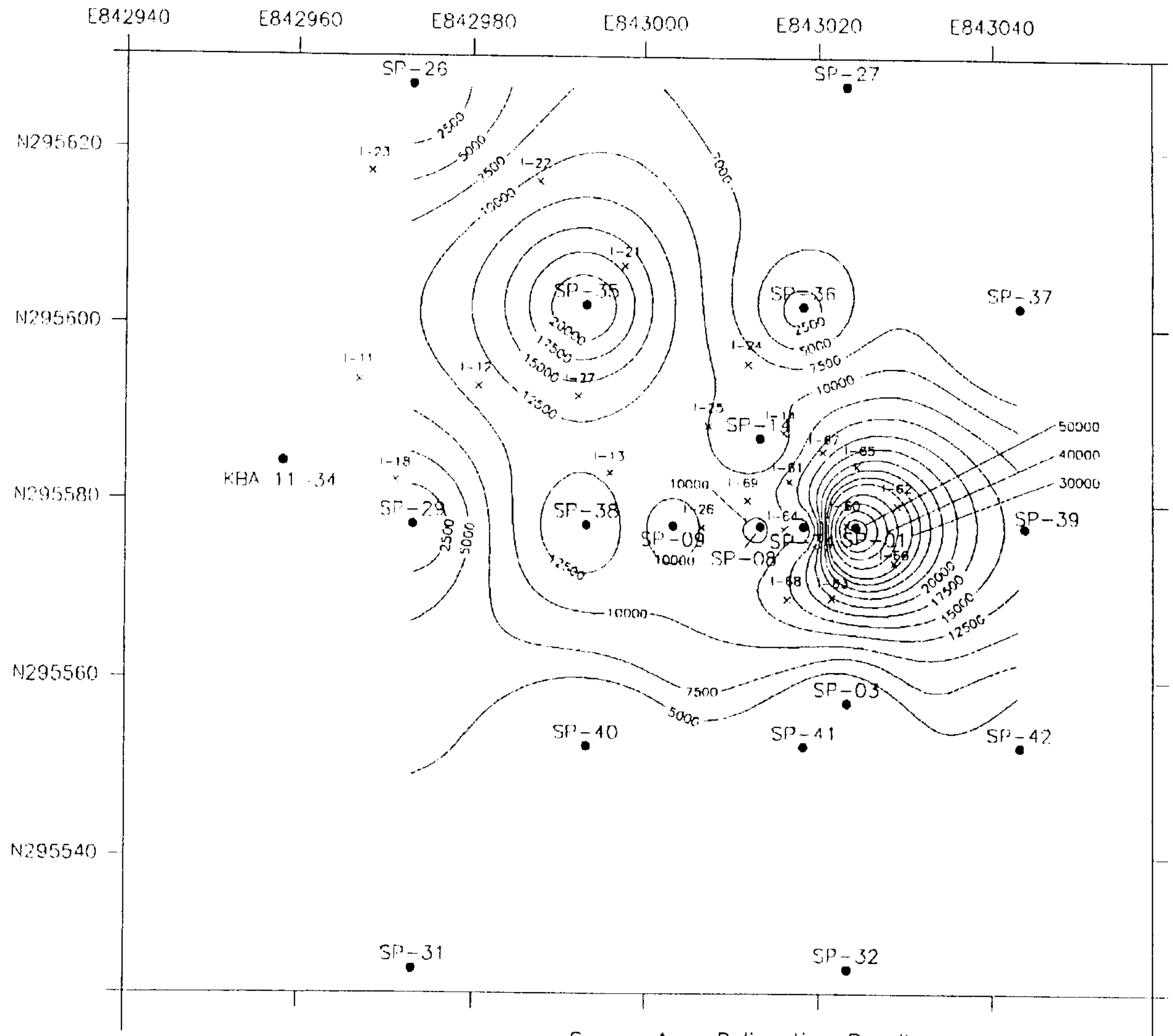
Figure 1-3 is provided to illustrate the groundwater contaminant plume isopleths based on the source area delineation efforts.

TABLE 1-3

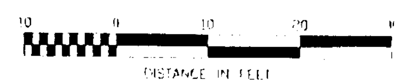
January 8-12, 2001 and February 7, 2001 Source Area Delineation Effort Results

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs
		VC	cis-1,2-DCE	trans-1,2-DCE	TCE	PCE		
SP-34	36 to 40	<39	900	<64	430	5,300	6,630.0	6,630.0
	40 to 44	<39	200	<64	<31	5,100	5,300.0	53.1
	44 to 48	<39	77 J	<64	<31	11,000	11,077.0	11,077.0
	48 to 52	3.7	46	<0.64	0.5 J	43	93.2	123.6
SP-35	36 to 40	53	62	8.4	22	56	201.4	201.4
	40 to 44	<3.9	37	<6.4	33	1,300	1,370.0	1,375.9
	44 to 48	<24	150	<12	55	22,000	22,205.0	22,205.0
	48 to 52	<3.9	<0.47	<0.64	25	460	485.0	496.0
SP-36	36 to 40	<0.39	<0.47	<0.63	0.38 J	90	90.4	94.0
	40 to 44	<3.9	24	<6.4	10	1,700	1,734.0	1,742.3
	44 to 48	5.2	340	1.8	1.1	14	362.1	413.5
	48 to 52	2.9	14	<0.23	<0.22	0.42 J	17.3	37.7
SP-37	36 to 40	1.2	0.58 J	<0.23	<0.22	6	7.8	13.4
	40 to 44	5.1	180	0.6 J	0.47 J	3.5	189.7	229.8
	44 to 48	1.3	17	<0.23	<0.22	3.7	22.0	36.2
	48 to 52	3.2	11	<0.23	0.31 J	3.8	18.3	36.7
SP-38	36 to 40	<0.39	6.5	<0.64	7	130	143.5	144.9
	40 to 44	<0.39	2.9	<0.64	1.8	90	94.7	96.5
	44 to 48	<39	<47	<64	<31	15,000	15,000.0	15,000.0
	48 to 52	<39	<47	<64	<31	5,100	5,100.0	5,100.0
SP-39	36 to 40	<3.9	<4.7	<6.4	4.3 J	1,800	1,804.3	1,804.3
	40 to 44	<3.9	<4.7	<6.4	5.6 J	2,900	2,905.6	2,905.6
	44 to 48	0.55 J	8.5	<0.23	<0.22	190	199.1	212.9
	48 to 52	<4.8	<1.4	<2.3	<2.2	680	680.0	686.9
SP-40	36 to 40	<3.9	<4.7	<6.4	<3.1	200	200.0	200.0
	40 to 44	<0.39	<0.47	<0.64	<0.31	11	11.0	13.8
	44 to 48	3.4	71	<0.64	<0.31	2.8	77.2	95.9
	48 to 52	3.6	85	0.73 J	1.3	1.6	92.2	333.0
SP-41	36 to 40	<3.9	<4.7	<6.4	11	1,500	1,511.0	1,511.0
	40 to 44	2.7	26	<0.64	0.76 J	73	102.5	119.2
	44 to 48	<3.9	<4.7	<6.4	16	1,500	1,516.0	1,520.4
	48 to 52	<3.9	<4.7	<6.4	13	1,200	1,213.0	1,213.0
SP-42	36 to 40	<0.48	0.33 J	<0.23	<0.22	0.51 J	0.8	2.6
	40 to 44	<4.8	<1.4	<2.3	14	2,400	2,414.0	2,425.3
	44 to 48	2.8	62	<0.64	0.44 J	3.4	68.6	131.6
	48 to 52	2.5	69	<0.64	0.81 J	<1.2	72.3	342.6
I-60	36 to 39	<0.48	6.0	<0.23	17	130.0	153.0	154.0

Notes:
J: J qualifier denotes the concentration is estimated.
bls: below land surface
DCE: Dichloroethene
TCE: Trichloroethene
PCE: Tetrachloroethene
TCLE: Total Chlorinated Ethenes
VOCs: Volatile Organic Compounds
All concentrations reported in micrograms per liter (μg/L)
TCLE is defined as the summation of PCE, TCE, DCE, and Vinyl Chloride.
Total VOCs is defined as the sum of all detected constituents by USEPA Method 8021B.



Sample Well ID Number	Concentration (ppb)
SP-01	54,053
SP-03	2,300
SP-08	9,400
SP-09	9,100
SP-14	7,500
SP-26	445
SP-27	278
SP-29	520
SP-31	44
SP-32	58
SP-34	11,077
SP-35	22,205
SP-36	1,734
SP-37	190
SP-38	15,000
SP-39	2,906
SP-40	200
SP-41	1,516
SP-42	2,414



Source Area Delineation Results

Total Chlorinated Ethenes (ppb) November 2000 & January 2001 Contour Interval - 2500 ppb

Courtesy of J.A. Jones Management Services

CH2MHILL

A052001004ATL - KingsBay105 FH8

Figure 1-3

Groundwater Containment Plume Isopleth Map

NSB Kings Bay, Georgia

1.3 Project Objectives

The project objective is to utilize the analytical data collected during the source area delineation effort to design and implement a Fenton's reagent chemical oxidation and vegetable oil injection strategy to remediate the groundwater contamination located in the delineated source area at Site 11.

The following documents were utilized by CCI/J.A. Jones in its preparation of this Work Plan:

- Bechtel Environmental, Inc. July 2000. Completion Report for In Situ Chemical Oxidation, July 1998 - July 2000, Site 11, Old Camden County Landfill; NSB Kings Bay, Georgia.
- CCI Constructors, Inc. August 2000. Work Plan for source Delineation at site 11, Old Camden Landfill, Naval Submarine Base Kings Bay, Kings Bay, Georgia.

2.0 Project Execution Plan

The scope of work, project schedule, communications plan and traffic control plan are described in this section.

2.1 Scope of Work

The scope of work for this project includes the following activities:

- Mobilization and Setup of Temporary Facilities and Site Controls
- Fenton's Reagent Chemical Oxidation Injection
- Vegetable Oil Injection
- Site Restoration
- Decontamination
- Demobilization

2.1.1 Mobilization and Setup of Temporary Facilities and Site Controls

This task will consist of the mobilization of personnel and equipment to the work site and the establishment of temporary facilities, consisting of portable sanitary facilities, a decontamination area, site refuge area, and equipment laydown area. Project management and scheduling activities, including contractor coordination, will be achieved from the CCI/J.A. Jones office trailer located at NSB Kings Bay equipped with telephone and facsimile capabilities. CCI/J.A. Jones will utilize the existing office trailer located at Site 11. Office supplies, field equipment, and personal protective equipment (PPE) will be stored in the office.

Prior to the commencement of site activities, site controls including construction barricades will be installed and the decontamination area, site refuge area, and equipment laydown area will be prepared. If necessary, security fencing will also be installed. CCI/J.A. Jones will coordinate with both the NSB Kings Bay Public Works Center and the Resident Officer in Charge of Construction (ROICC) to acquire utility layout plans of the area. Utilities in the area will be marked with paint and stakes, as appropriate. All marked utility lines in construction areas will be uncovered with hand tools. In addition, the progress of subsurface work will be continuously monitored for evidence of subsurface obstructions.

Prior to vegetable oil injection, the Revised Underground Control Permit No. 089, dated June 3, 1999, will be modified to allow the injection of vegetable oil and the additional injection wells.

2.1.2 Chemical Oxidation Injection

The chemical oxidation process to be utilized at the site is an aggressive, pressurized injection of concentrated hydrogen peroxide and ferrous iron catalyst, which together are known as Fenton's reagent and generate a hydroxyl free radical that acts as the active oxidizing agent. The hydroxyl free radical is a powerful, non-selective oxidant.

Fenton's reagent oxidizes chlorinated VOCs, such as PCE, to carbon dioxide, water, and chloride. Residual hydrogen peroxide not consumed by oxidation of the chlorinated VOCs naturally decomposes to oxygen and water. Soluble ferrous iron catalyst amendments will naturally precipitate as ferric iron compounds.

The hydrogen peroxide, in a 25 to 50 percent concentration, will be injected, along with the ferrous iron catalyst, through a series of injectors. A typical injector for a chemical oxidation injection at this site would be constructed of 1.25-inch diameter Schedule 80 black iron riser with a 3-foot long section of 0.01-inch slot, stainless steel well screen. Each injector would be installed with a four-foot thick sand pack consisting of 6/20-grade silica sand, a 1-foot thick bentonite seal, and a grouted annulus. The injectors will be installed by either direct-push or hollow stem auger drilling techniques.

The chemical oxidation injector parameters (actual number, placement, and construction details) and hydrogen peroxide and ferrous iron catalyst injection concentrations and methodology are vendor-specific and will be determined by the selected chemical oxidation injection vendor at a later date. The proposed chemical oxidation treatment area is shown on Figure 2-1 and the proposed chemical oxidation treatment zone at the site is from 40 to 50 feet bls as determined by the source area delineation effort.

Prior to the chemical oxidation process, one sediment sample from each different screened depth interval associated with the chemical oxidation injection will be collected and analyzed for bioavailable iron, soil bulk density, and fraction of organic carbon of the soil in accordance with Section 3.0 Sampling and Analysis Plan of this Work Plan to assist in the development of a fate and transport model.

2.1.3 Vegetable Oil Injection

Chlorinated solvents may undergo biodegradation through three different pathways: as an electron acceptor, as an electron donor, or co-metabolism. Under anaerobic conditions, biodegradation of chlorinated solvents usually proceeds through a process called reductive dehalogenation. In general, reductive dehalogenation occurs by sequential dechlorination. For the chlorinated ethenes, dechlorination progresses from PCE to TCE to DCE to VC and ethene. PCE and TCE are the most susceptible of these compounds to reductive dehalogenation because they are the most oxidized. Because these compounds are used as electron acceptors, there must be an appropriate source of carbon for microbial growth and reductive dehalogenation to occur.

The most common approach utilized to stimulate reductive dehalogenation has been the addition of a carbon source dissolved in groundwater. Food-grade vegetable oil is a potential carbon source for microbial growth and the reductive dehalogenation process. The separate phase nature of vegetable oil allows for slow dissolution into groundwater thus making it a slow release carbon source. Vegetable oil is an inexpensive, innocuous carbon source that is not regulated as a contaminant by the USEPA.

Previous natural attenuation studies at Site 11 have shown reductive dechlorination processes are naturally occurring with the existing anaerobic conditions, therefore the approach to enhance biodegradation of the remaining chlorinated ethenes following chemical oxidation will be to inject vegetable oil as a carbon source for microbial growth and stimulation of the reductive dehalogenation process.

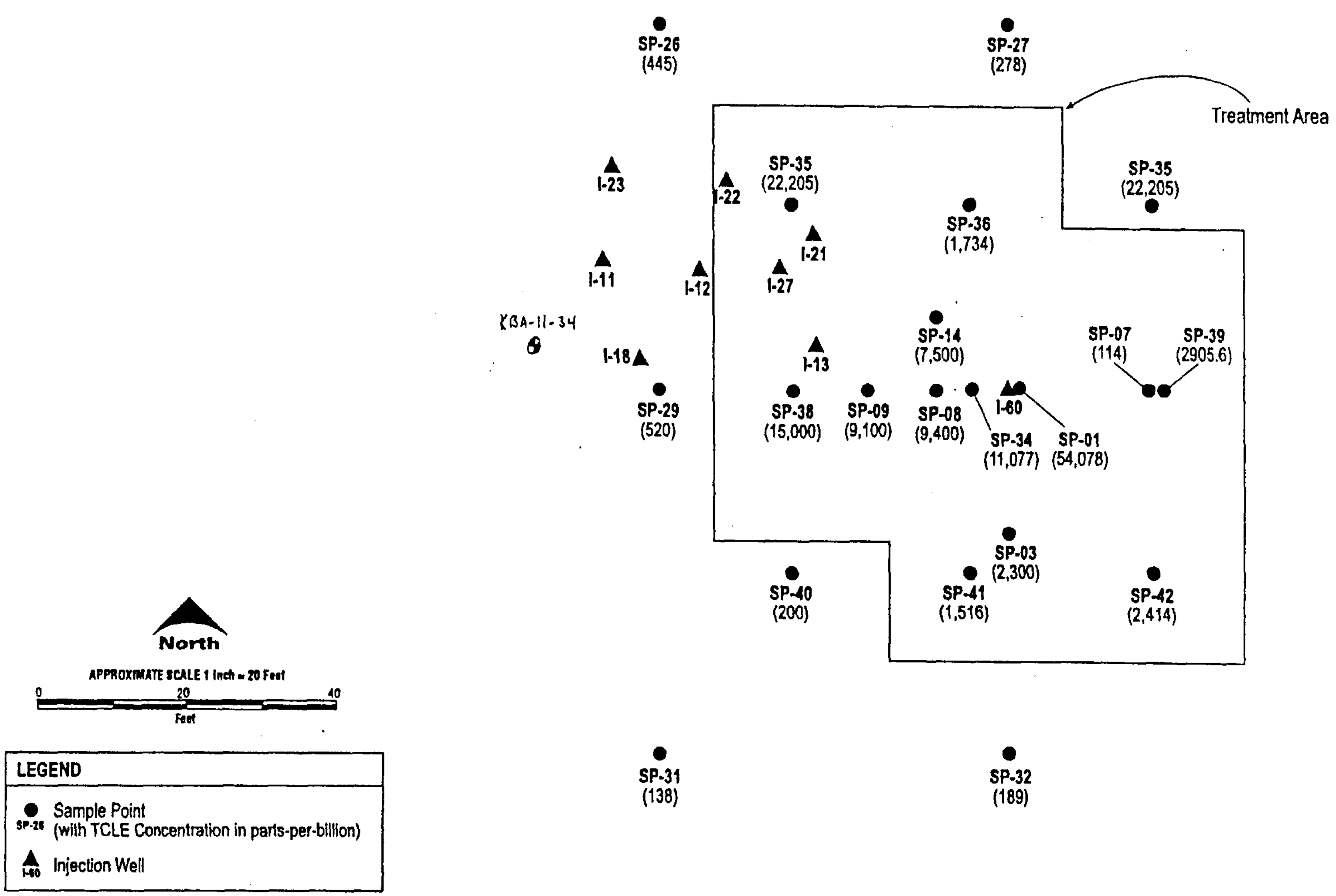


Figure 2-1
Proposed Chemical Oxidation Treatment Area
NSB Kings Bay, Georgia

CH2MHILL
A052001004ATL - KingsBay102.FH8

Following completion of the chemical oxidation injection, the vegetable oil injection will begin immediately. Initially, injection of vegetable oil (specifically food-grade soybean oil) will begin at a location 10 feet upgradient of Injector I-60 to determine the volume and radius of acceptance of the surrounding lithology. Vegetable oil injection will be completed with a Geoprobe rig and the oil will be injected through the 1.25-inch Geoprobe direct-push rods and 4-foot well screen. The vegetable oil will be injected from 32 feet bls through 52 feet bls in 4-foot intervals. The vegetable oil injection will begin with the simplest method of delivering the vegetable oil into the injection location (simple gravity feed). If this method is not successful, then a Geoprobe grout pump will be used to inject the vegetable oil under pressure at no more than 10 pounds per square inch. Based upon observations and experience gained during the initial injection, a modification of the injection method to better accommodate the site-specific conditions may be warranted.

Once the volume and radius of acceptance of the surrounding lithology are determined, the full-scale vegetable oil injection will begin. Approximately 150 to 250 gallons of vegetable oil is anticipated for injection into each of the proposed 39 injection locations. The actual volume of vegetable oil pumped into each injection location will depend on volume of acceptance of the surrounding lithology. It is important that the vegetable oil be incorporated into a very high percentage of the formation pore space. At each injection location, vegetable oil will be injected from 32 feet bls through 52 feet bls in 4-foot intervals. The proposed locations for vegetable oil injection are shown on Figure 2-2. Injection points installed for the chemical oxidation injection may be used for vegetable oil injection based on the actual placement and construction details.

A National Science Foundation-certified potable, water-safe, tracer dye will be mixed with the vegetable oil prior to injection to assist in determining the contaminant degradation, oil travel time, and oil dispersion. It is anticipated that the dye can be measured in the groundwater that has come into contact with the oil. In addition to the dye, micronutrients nitrogen and phosphorus will be added to the vegetable oil if the nitrogen and phosphorus content in the procured vegetable oil is deemed not sufficient. The micronutrients will be added to support the microbial growth necessary to enhance natural attenuation.

Vegetable oil injection will address the anticipated slight contaminant rebound following chemical oxidation injections and will preclude the further necessity of in-depth investigations at the site. Future site monitoring will be performed in accordance with the Site 11 Groundwater Monitoring Plan.

2.1.4 Site Restoration

Areas disturbed during site work will be restored to their previous condition. Restoration of disturbed areas of asphalt or concrete will include subgrade compaction to prevent subsidence, followed by the replacement of asphalt or concrete. Following chemical oxidation injection completion, each injector will be properly abandoned by sealing the injector with grout from the bottom of the well to the ground surface using a tremie pipe. Following vegetable oil injection completion, each boring will be properly abandoned by sealing with grout from the bottom of the boring to the ground surface using a tremie pipe.

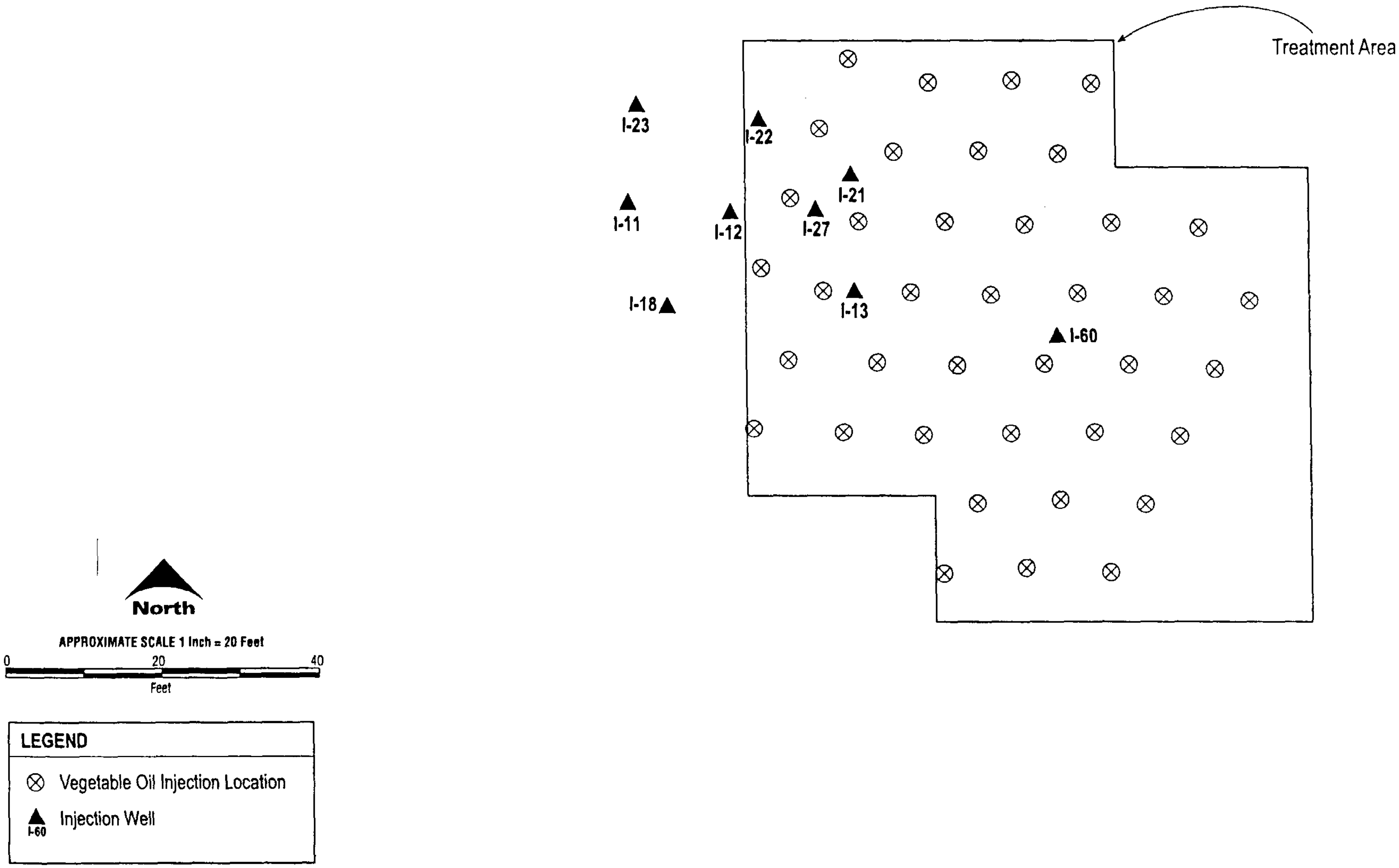


Figure 2-2
Proposed Vegetable Oil Injection Locations
NSB Kings Bay, Georgia

CH2MHILL

A052001004ATL - KingsBay103.FH8

2.1.5 Decontamination

Personnel and equipment will be properly decontaminated to remove all contamination that may be adhering to personnel or equipment as a result of site activities. Any water accumulated during the decontamination process will be containerized in 55-gallon drums, sampled in accordance with Section 3.0 Sampling and Analysis Plan and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan. All debris generated by remediation activities will be properly contained and disposed of at a facility permitted to accept the waste. Section 4.0 Waste Management Plan describes the requirements for onsite management and offsite disposal of all wastestreams. Decontamination of personnel and equipment will be performed in accordance with the site-specific Health and Safety Plan provided in Appendix D and the applicable provisions of 29 Code of Federal Regulations (CFR) 1910.120.

2.1.6 Demobilization

Prior to demobilization, an as-built survey of all new chemical oxidation and vegetable oil injection points will be performed to 1983 State Plane Coordinates of Georgia.

During demobilization, temporary facilities, utilities, and equipment will be removed from the site. In addition, any debris or solid waste material remaining from site activities will be removed and properly disposed of offsite in accordance with Section 4.0 Waste Management Plan.

2.2 Project Schedule

The major project activities and estimated durations for each are outlined below.

• Pre-construction Meeting/Submittal Preparation/Reviews	45 days
• Mobilization	2 days
• Pre-Chemical Oxidation Sediment Sampling	1 day
• Injector Installation	3 weeks
• Primary Chemical Oxidation Injection	5 days
• Polish Chemical Oxidation Injection (if necessary)	5 days
• Vegetable Oil Injection	10 days
• Construction Completion Report	30 days

CCI/J.A. Jones anticipates the total project duration (from pre-construction conference through submittal of the Construction Completion Report) will be approximately 120 days. This proposed schedule may vary depending on the actual conditions encountered in the field. Appendix A provides a schedule for the work to be performed.

2.3 Communications Plan

A communication matrix outlining the lines of communications for Southern Division, NAVFAC and CCI/J.A. Jones is presented in Table 2-1. Table 2-2 provides a project personnel directory.

TABLE 2-1
Communications Matrix

CCI/J.A. Jones Position	Navy Direct Report
Ray Tyler, Executive Sponsor	Eva Clement, CO
Scott Newman, Program Manager	Jimmy Jones, COTR David Pilarski, ACO
Flip Altman, Senior Project Manager	Jimmy Jones, COTR David Pilarski, ACO
Sam Ross, CTO Project Manager	Anthony Robinson, RPM Larry Blackburn, NTR/ROICC John Garner, NSB Kings Bay

CO	Contracting Officer
COTR	Contracting Officer's Technical Representative
ACO	Administrative Contracting Officer
RPM	Remedial Project Manager
NTR	Navy Technical Representative
ROICC	Resident Officer in Charge of Construction

TABLE 2-2
Project Personnel Directory

Contact	Company
R. Scott Newman, Program Manager Flip Altman, Senior Project Manager Marsha Robinson, Contracts Administration Manager Angelo Liberatore, Health and Safety Manager Theresa Rojas, QA/QC Manager	CH2M HILL Constructors, Inc 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
Sam Ross, Project Manager	J.A. Jones Environmental Services Company 8936 Western Way, Suite 10 Jacksonville, FL 32256 904/363-0911
Eva Clement, CO	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5518
David Pilarski, ACO	843/820-5928
Jimmy Jones, COTR	As above 843/820-5544
Anthony Robinson, RPM	As above 843/820-7339
Cliff Casey, Navy Environmental Technical Support	As above 843/820-5561
Larry Blackburn, NTR/ROICC	Southern Division Naval Facilities Engineering Command Resident Officer in Charge of Construction P. O. Box 139, Building 13 NAS Jacksonville, FL 32212-0139 904/542-5571, ext. 117 904/237-1868 (mobile)
John Garner, NSB Kings Bay Environmental Director	Facilities and Environmental 1063 USS Tennessee Street Building 2015 NSB Kings Bay, Georgia 31547-2606 912/673-2001, ext. 4048

2.4 Traffic Control Plan

Traffic control at the site will be the responsibility of the CCI/J.A. Jones Site Superintendent. CCI/J.A. Jones will minimize disturbance to Base operations during project activities. CCI/J.A. Jones will consult with onsite Navy personnel to evaluate site access, placement of equipment, and traffic flow to minimize the impact of this work to Base operations. CCI/J.A. Jones will review all Navy regulations and standard operating procedures regarding vehicle movement and control inside NSB Kings Bay.

3.0 Sampling and Analysis Plan

The SAP provided in this Work Plan outlines the required sampling activities associated with the groundwater remedial activities at Site 11 located at NSB Kings Bay, Georgia. This plan outlines the required locations, frequency, and analyses for sediment samples to be collected. In addition, this SAP provides the recommended analyses for disposal characterization for wastes generated during these remedial activities.

Samples will be collected and analyzed in accordance with USEPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May 1996 (includes 1997 revisions).

3.1 Data Quality Objectives for Measurement Data

The data quality objectives for each sampling task described above are listed in Table 3-1. The sampling and analytical requirements, along with the required level of QC and data packages are listed in Table 3-2.

A Navy-, United States Army Corps of Engineers- (USACE)-, or Air Force Center for Environmental Excellence (AFCEE)-approved laboratory will be used for all sample.

TABLE 3-1
Data Quality Objectives

Sampling Activity	Data Quality Objective Category
Sediment collection (offsite laboratory)	Definitive
Waste characterization of the soils and aqueous waste (offsite laboratory analyses)	Definitive

3.2 Sediment Collection

One sediment sample will be collected prior to chemical oxidation injection from each different screened depth interval associated with the chemical oxidation injection. These samples will be collected using the DPT/Geoprobe rig and analyzed according to Table 3-2.

The bioavailable iron sample will collected and submitted to Cliff Casey, Navy Environmental Technical Support for analysis. The fraction of organic carbon in soil will be analyzed by USEPA SW-846 Method 9060 (total organic carbon), which gives a result in percent total organic carbon (TOC), and calculated to give gram of TOC per gram of soil.

Table 3-2
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method[1]	Sampling Equipment[1]	TAT[2]	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
Sediment Sampling Prior to Chemical Oxidation Injection													
Sediment Sampling	Sampling Depth Intervals to be determined based on Chemical Oxidation Injection Strategy	Sediment	Once (prior to Chemcal Oxidation Injection)	As Required	Grab	Geoprobe rig; SS spoon	7 days	DQO Level III, CCI Level B	Bioavailable Iron	Analyzed by Frank Chappelle, USGS	N/A	N/A	1 Quart Mason Jar
									Bioavailable Iron sample will be turned over to Cliff Casey for analysis				
									Soil bulk density	Physical testing lab	N/A	N/A	(2) 8 oz glass
									fraction of organic carbon of the soil (FOC)	9060 (gives %TOC/soil then calculate to get gm of TOC/gm of soil	ASAP	Cool to 4°C; DARK	(1) 4 oz amber glass
Disposal of Aqueous Waste													
Disposal of Aqueous Waste	Aqueous disposal material	Water	One per 6 drums; one per container; or as required by disposal facility	As Needed	Grab	Drum thief or dip jar	7 days	DQO Level III, CCI Level B	Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
									Semi-volatiles	8270C	7 days ext; 40 days analysis	Cool to 4°C	(3) 1L amber glass
									Pesticides	8081A	7 days ext; 40 days analysis		
									Herbicides	8151A	7 days ext; 40 days analysis		
									TPH	FL-PRO	7 day extr; 40 day analysis	HCl pH< 2; Cool to 4°C	(1) L amber glass
									TAL Metals	6010B/7470A	6 months/Hg = 28 days	HNO_3 pH< 2; Cool to 4°C	(1) 500ml HDPE
									Reactivity	1010/1020A	ASAP	Cool to 4°C	(1) 500ml HDPE
									Ignitability	9040B	ASAP		
									Corrosivity	Chapter 7.3	ASAP		

TABLE 3-2
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method1	Sampling Equipment1	TAT2	DQO Level/Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
Disposal of Solid Waste													
Solids Disposal	Solid disposal material	Soil	Once per 6 drums; once per container; or as required by disposal facility	As Needed	Dig to approx 6-12" for sample	SS Auger, SS Spoons, SS Bowl	7 days	DQO Level III, CCI Level B	Volatiles	8260B	14 day analysis	Cool to 4oC	(1) 4 oz amber glass
									Semi-Volatiles	8270C	14 day extr; 40 day analysis	Cool to 4oC	(1) 16 oz amber glass
									Pesticides	8081A	14 day extr; 40 day analysis		
									Herbicides	8151A	14 day extr; 40 day analysis		
									TAL Metals	6010B, 7470A	6 month analysis Hg: 28 day analysis	Cool to 4oC	(1) 16 oz amber glass
									TPH	FL-PRO	14 day extr; 40 day analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									Ignitability	1030	ASAP		
									Corrosivity	9045A	ASAP		
									Reactivity	Chapter 7.3	ASAP		

3.3 Waste Characterization and Incidental Wastestream Sampling and Analyses

3.3.1 Soil/Solids Characterization

Waste characterization samples, if necessary, will be collected to evaluate the handling, transportation, and disposal requirements of any contaminated soil accumulated during project activities. It is anticipated that drill cutting soils will be placed in drums or rolloffs depending on the volume generated. Soil samples will be collected as follows, delivered to a Navy-, USACE-, or AFCEE-approved laboratory and analyzed for the parameters listed on Table 3-2.

Soil/solids characterization samples will be collected from the drums and/or rolloffs prior to disposal. One composite sample will be collected one per six drums, one per rolloff container or as required by the disposal facility. The samples will be collected as follows.

When collecting samples from drums, the volatile sample will be collected from the drums containing the drill cuttings from the most contaminated area(s). The top 6 inches will be removed and the Encore samples will be collected. When collecting samples from rolloffs, volatile samples will be collected from most contaminated area within the rolloff (visual staining or odors). Again the top 6 or more inches will be removed and the Encore samples will be collected. Volatile samples will be collected as follows:

1. Open the Encore reusable package and remove the core device and cap.
2. Place into the T-handle and core the sample directly into the exposed soil.
3. Remove from the soil, brush off the sides, and put the cap seal onto the sampler.
4. Label and reseal in the original package.
5. Place into cooler for shipment.

When collecting non-volatile samples from drums, one or more grabs per each of six drums will be collected and placed into a stainless steel bowl. When collecting non-volatile samples from rolloffs, at least four grabs will be collected from four points at varying depths using a stainless steel auger.

1. The soil will be blended, coned and quartered using a stainless steel spoon.
2. Fill the appropriate sample jars approximately three-fourths full with the homogenized sample
3. Close the jar, label, and package the sample for shipment to the lab.

A CCI Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. All analytical data will be submitted by both hard copy and electronic files.

3.3.2 Water Characterization

Waste characterization samples, if necessary, will be collected to evaluate the handling, transportation, and disposal requirements of generated decontamination water and any other miscellaneous collected water. It is anticipated that the aqueous waste will be containerized in drums. Water samples will be collected as follows and delivered to a Navy-, USACE-, or AFCEE-approved laboratory and analyzed for the parameters listed on Table 3-2.

A sample will be collected from the drums using either a dip jar or bailer. The sample containers for volatile analyses will be filled first. The 40-milliliter vials will be filled so that there is no headspace in each vial. The sample containers for the remaining analyses will then be filled.

A CCI Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. All analytical data will be submitted by both hard copy and electronic files.

3.4 Analytical Methods

Samples will be collected for analytical methods summarized in Table 3-2.

Preliminary analytical results will be faxed to the CCI Laboratory Coordinator/Data Management Manager, at the following facsimile number per the turn-around times listed in Table 3-2 from day of sample receipt. The final hardcopy data and electronic file will be delivered to CCI within 14 days of sample receipt. CCI is responsible for reviewing all laboratory analytical data for QA/QC purposes.

CCI Laboratory Coordinator/Data Management Manager
CCI
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346
(770) 604-9182 x268
(678) 604-9282 (fax)

4.0 Waste Management Plan

The Waste Management Plan describes the waste management requirements and procedures for groundwater remediation activities at Site 11 located at NSB Kings Bay, Georgia. These activities are anticipated to generated the following wastes:

- Aqueous waste (including purge water, and decontamination water)
- Drill cuttings
- Spent or contaminated sampling equipment
- PPE
- Uncontaminated debris (such as caution tapes, barricades, signs, packing materials)

4.1 Waste Characterization

All wastes will be classified (and managed) as required under the Resource Conservation and Recovery Act (RCRA) and Subchapter 391-3-11-07 of the Georgia Department of Natural Resources hazardous waste regulations. Section 3.0 Sampling and Analysis Plan provides detailed information on the sampling and analysis requirements for waste characterization, as required for disposal. In some cases, offsite facilities may require additional analyses to evaluate the wastestream prior to acceptance. Uncontaminated wastes and debris will be characterized using process knowledge and generally will be classified as municipal solid waste. In this task, PCE and TCE are considered listed hazardous wastes. Accordingly, any purge water and soil that contain detectable concentrations of PCE or TCE will be managed and disposed as hazardous waste; specifically, as F001/F002 listed hazardous waste.

4.1.1 Waste Profile

Waste characterization information for non-hazardous wastes will be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. (For hazardous wastes, the waste characterization information will be provided to the NSB Kings Bay Base Operations Services contractor for their use in preparing the profile). An approved copy of the waste profile will be received prior to offsite transportation of the material. If required, generator certification and/or signature will be provided by the Navy.

The profile typically requires the following information:

- Generator (Navy) information including
  - Commanding Officer, NSB Kings Bay
  - 1063 USS Tennessee Avenue, Kings Bay, GA 31547
  - Contact: Ken Yargus
  - 912/673-2001, ext. 1217
- USEPA ID Number: GA4170090001
- Activity generating waste (e.g., Site 11 site remediation)
- Source of contamination (e.g., landfill disposal)
- Physical state of waste (e.g., solid, liquid, etc.)

4.2 Waste Management

4.2.1 Waste Storage Time Limit

Hazardous waste must be removed within 90-days from the date of generation and other wastes will be removed from the site as soon as possible. The date of generation is the day that a waste is first placed in a container.

4.2.2 Labels

All containers, tanks, and roll-off containers will be labeled, and labels will be visible. Hazardous waste labels will be used where a site has been pre-characterized, and known to be contaminated with listed or characteristic hazardous wastes.

Pre-printed "Hazardous Waste" labels will include the following information:

- Accumulation start date
- Generator Name and address:
  - Commanding Officer, NSB Kings Bay
  - 1063 USS Tennessee Avenue, Kings Bay, GA 31547
  - Contact: Ken Yargus
  - 912/673-2001, ext. 1217
- USEPA ID number: GA4170090001
- Waste codes: F001, F002

For containers of less than 110 gallons, the manifest number must be on the label before transporting.

Containers of known non-hazardous waste will have pre-printed "Non-Hazardous Waste" labels that include the following information:

- Accumulation start date
- Generator Name and address:
  - Commanding Officer, NSB Kings Bay
  - 1063 USS Tennessee Avenue, Kings Bay, GA 31547
  - Contact: Ken Yargus
  - 912/673-2001, ext. 1217
- USEPA ID Number: GA4170090001
- Waste-specific information (e.g., contaminated groundwater)

When waste characterization is unknown and analytical results are pending, the pre-printed "Analysis Pending" label will be used until analytical results are received and reviewed, and a waste designation determined. These wastes will contain the equivalent information provided on a "Hazardous Waste" label:

- Accumulation start date
- Generator Name and address:
  - Commanding Officer, NSB Kings Bay
  - 1063 USS Tennessee Avenue, Kings Bay, GA 31547
  - Contact: Ken Yargus
  - 912/673-2001, ext. 1217

- USEPA ID Number: GA4170090001
- Waste-specific information (e.g., contaminated groundwater)

4.2.3 Waste Management Requirements

All wastes will be contained so as to prevent the spread of contamination. Waste-specific requirements include:

- Purge water and/or decontamination water will be contained in 55-gallon drums or aggregated in portable tanks.
- Drill cuttings will be contained in drums or roll-off boxes.
- Contaminated sampling equipment, PPE, and other debris will be contained in drums. If decontaminated, these wastes can be disposed as uncontaminated debris/solid waste; if not, these wastes will be managed and disposed at the source concentration.
- Uncontaminated general construction debris will be placed with in containers or neatly placed in storage piles, pending offsite disposal.

4.2.4 Drums/Small Containers

Drums and/or small containers will be managed as follows:

- Drums and/or small containers of hazardous waste will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic bonding.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label as described in Section 4.2.2.
- Drums will remain covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.
- Drums will be disposed of with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.

4.2.5 Portable Tanks

Portable tanks will be managed as follows:

- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents will be rejected.
- Tanks will be provided with covers.

- Each tank will be labeled, as described in Section 4.2.2.
- Tanks will be provided with secondary containment.

4.2.6 Roll-off Boxes

Roll-off boxes will be managed as follows:

- Roll-off boxes will be inspected upon arrival onsite. Any roll-off boxes arriving with contents will be rejected.
- Roll-off boxes for hazardous soils will be provided with disposable liners which will be disposed of as contaminated debris.
- When not in use, securely fastened covers will be installed on all roll-off boxes.
- Old labels will be removed, and new labels will be attached as described in Section 4.2.2.
- Roll-off containers will be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure.

4.2.7 Security and Contingency Planning

In general, all waste storage areas will contain emergency response equipment equivalent to hazard posed by waste. Typical items emergency response will include fire extinguishers, decontamination equipment and an alarm system (if radio equipment is not available to all staff working in storage areas). **Spill control equipment (e.g., sorbent pads) will be available in all waste storage areas, and where liquids are transferred from one vessel to another.**

4.2.8 Waste/Fuel Storage Area Inspections

Areas used for waste/container storage will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- Daily inspection of containers, tanks, and secondary containment systems (if applicable) for leaks, signs of corrosion, or signs of general deterioration
- Daily inspection of fuel storage areas (e.g., look for eroding containment systems and rusting tanks/ancillary equipment)

Waste storage areas will be inspected each day of operation during the scheduled shift (i.e., Monday through Friday). **If operations will suspend for more than 7 days, alternate inspection arrangements will be made, such that waste storage areas are inspected at least weekly. Prior to demobilization, all hazardous waste or materials will be removed from the site. Inspections will be recorded in the Contractor Quality Control Report, and copies of the report will be maintained onsite, and available for review.**

4.3 Transportation

Hazardous wastes will be transported and disposed by the NSB Kings Bay Base Operating Services contractor. For non-hazardous waste, each transportation vehicle and load will be inspected before leaving the site. The quantities of waste leaving the site will be recorded. A contractor licensed for commercial transportation will transport non-hazardous wastes. A copy of the documentation indicating that the selected transporter has appropriate licenses will be received prior to transport of any waste material.

4.3.1 Manifests/Shipping Documentation

Manifests and other shipping documentation for hazardous wastes will be prepared by the NSB Kings Bay Base Operating Services contractor. Each load of non-hazardous waste material will be transported with a manifest or haul ticket (for uncontaminated construction debris) prior to leaving the site. The non-hazardous waste manifest form will include the following information:

- Transporter information including name, address, contact and phone number
- Generator information including name, address, contact, and phone number
- Site name including street/mailing address
- Description of waste
- Type of container
- Quantity of waste (volumetric estimate)

4.3.2 Transporter Responsibilities

In general, the transporter will be responsible for weighing loads of non-hazardous waste at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container or tanker truck (for bulked aqueous wastes). Disposal quantities will be based on the difference of weight measurements between the full and empty container or tanker truck. Weights will be recorded on the shipping documentation. The transporter will provide copies of weight tickets with the final manifest to CCI/J.A. Jones.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Clean up material spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated materials to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling contaminated material.
- Seal trucks transporting liquids.

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the Health and Safety Plan.

No materials from other projects will be combined with materials from NSB Kings Bay.

Spill Reporting

In the event of a spill or release of any waste, the transporter must immediately notify CCI/J.A. Jones. The pertinent facts and information about the spill will be reported to CCI/J.A. Jones, and recorded, including:

- Type of material (e.g., soil, sludge, water) and contaminant
- Location
- Estimated volume
- Media affected (e.g., spilled on concrete pad or soil)
- Time of spill/release
- Final disposal of spilled material

Spill Response

The transporter will clean up any spill or release of waste (including soil or water) that occurs during transportation, or take such action as may be required or approved by Federal, State, or local officials. Spilled waste will be immediately cleaned up, including soils on the outside of the trucks or other container and on the ground or road surface. Where appropriate, the spilled material (e.g., soil), will be returned to the original waste container. In any case the spilled material will be properly contained and disposed.

4.3.3 Transportation and Disposal Log

Transportation of wastes will be inventoried the day of transportation from the site using the Transportation and Disposal Log. A carbon copy of the initial manifest form for each load will be retained onsite and attached to the Daily Production Report. All required transportation manifests will be prepared by CCI/J.A. Jones and signed by NSB Kings Bay representative.

4.4 Disposal of Wastestreams

Offsite treatment or disposal facilities will use the waste profile and supporting documentation (e.g., analytical data) to determine if they will accept a waste.

- Aqueous wastes may be discharged to the local publicly-owned treatment works (POTW) or other permitted waste water treatment plant with written approval from the facility or the Navy. The point of discharge (e.g., sewer manhole) will be designated by the POTW or the Navy. Otherwise, contained aqueous wastes will be disposed offsite at a facility permitted to accept the waste.

- Uncontaminated construction debris may be sent to municipal landfills, or landfills designated for construction/demolition debris. The treatment or disposal facility will be responsible for providing a copy of the final waste manifest and for a certificate of treatment or disposal for each load of waste received.

4.5 Training

Training requirements for onsite personnel, including subcontractors, is provided in the site-specific health and safety plan.

4.6 Records/Reporting

The following records and documents will be maintained:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data
  - Manifests, bills of lading, and other shipping records
  - Offsite facility waste receipts, certificates of disposal/destruction
- Training records
- Inspection records

CCI/J.A. Jones will maintain Material Data Safety Sheets (MSDS) for chemicals and/or hazardous materials brought onsite, including the MSDS for chemicals brought onsite by subcontractors.

5.0 Environmental Protection Plan

Section 5.0 Environmental Protection Plan provided in the CTO No. 0047 Work Plan No. 01 addresses the Environmental Protection Plan to be instituted during the performance of this CTO at NSB Kings Bay.

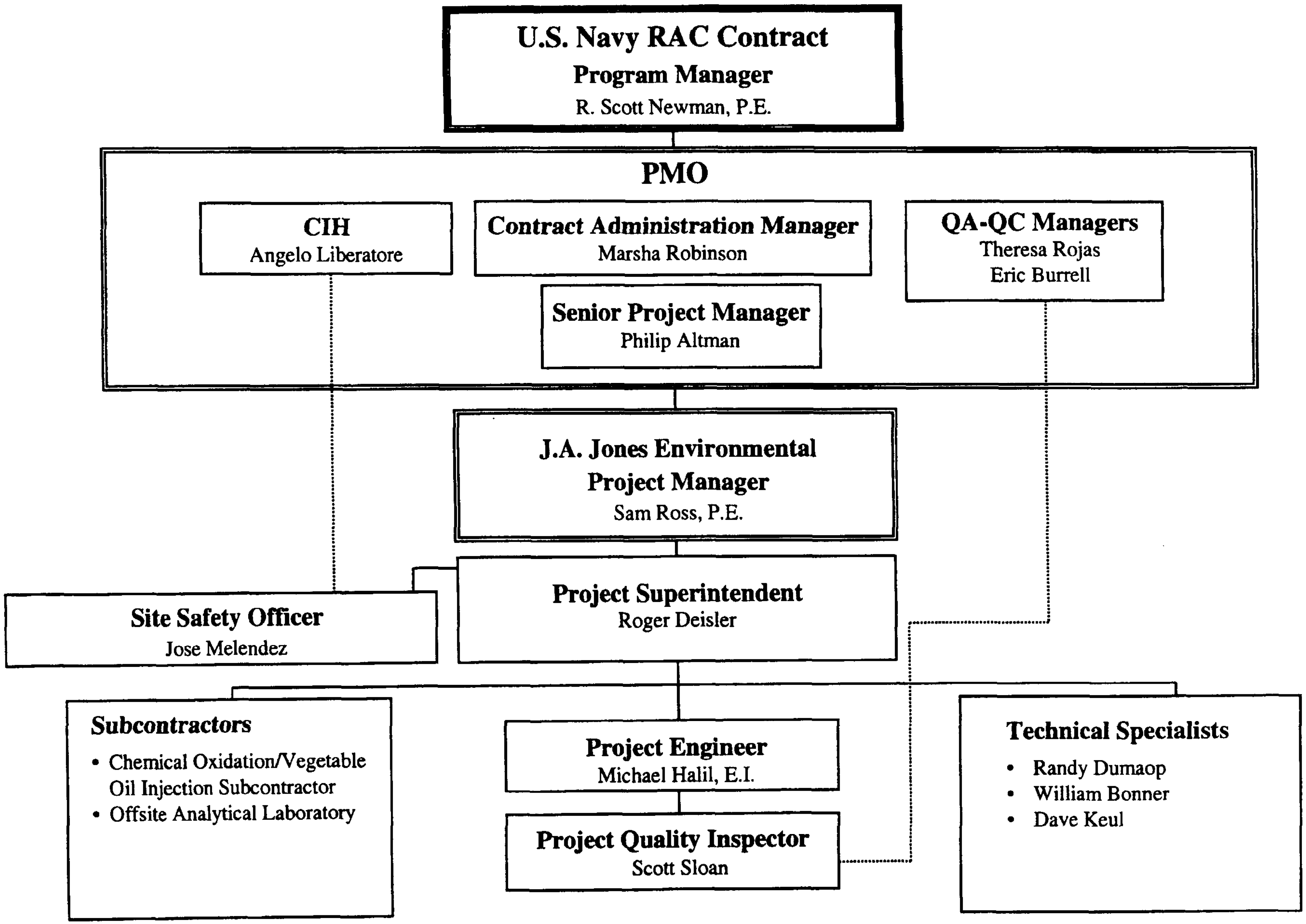
6.0 Quality Control Plan

Section 6.0 Quality Control Plan provided in the CTO No. 0047 Work Plan No. 01 addresses the Quality Control Plan to be instituted during the performance of this CTO at NSB Kings Bay.

The Submittal Register and Testing Plan and Log, included in Appendices B and C, respectively, document submittals for this project phase in accordance with Appendix B of CCI's Contract Management Plan (dated July 1998). CCI, the Navy, or others will approve submittals as identified in the Submittal Register. All approved submittals will be distributed by CCI to the appropriate Navy personnel (CO, ROICC (in duplicate), etc.), to the project site, and to the project file. Additional project QC documents are provided in Appendix C of the CTO No. 0047 Work Plan No. 01.

The site-specific project organization chart (Figure 6-1) depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated.

Figure 6-1
Project Organization Chart
Contract Task Order No. 0047
Groundwater Remediation at Site 11, Old Camden County Landfill

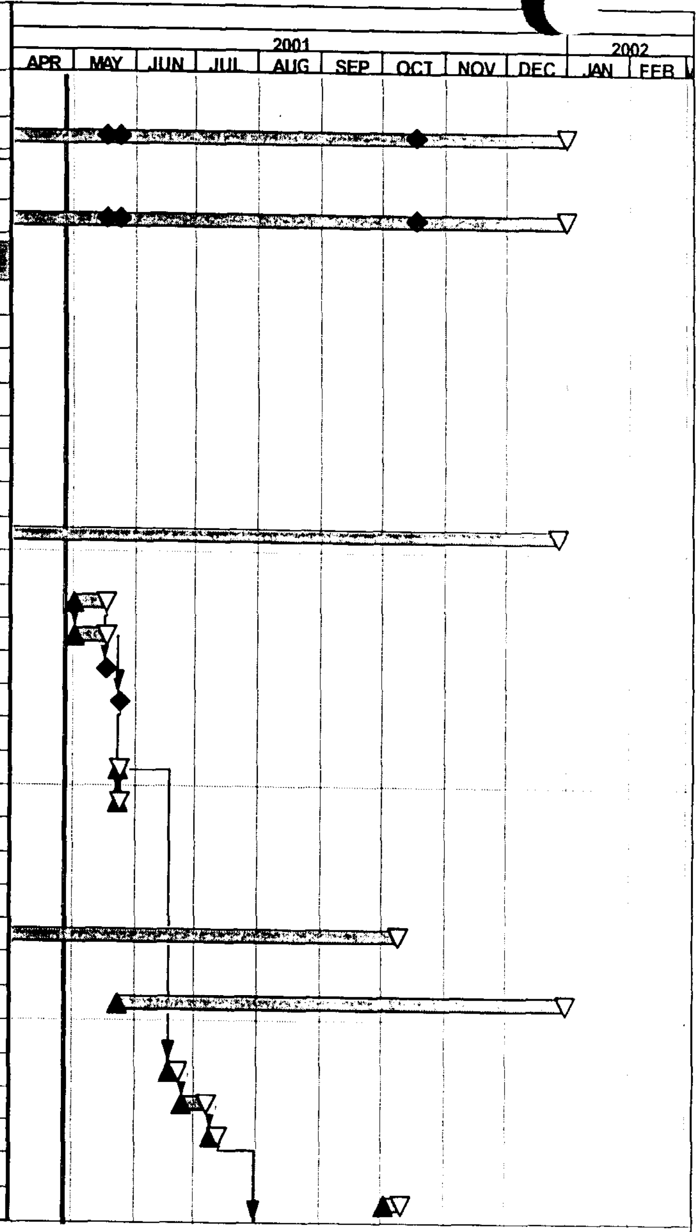


Appendix A

CPM Project Schedule

CTO #0047 - 160027 - NSB Kings Bay

Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish
Subtotal		29		331	169	31AUG00A	31DEC01
PHASE 3							
Subtotal		29		331	169	31AUG00A	31DEC01
SITE 11 CHEMICAL OXIDATION INJECTION REMOVAL							
FUNDING AUTHORIZATION							
BK99		100	Authorization Received	1	0	31AUG00A	31AUG00A
CTO SETUP/SITE VISIT							
BK99010290	99.01.02.90	100	CTO PRE-CON MEETING	1	0	06NOV00A	06NOV00A
BK99010291	99.01.02.91	100	CCI Mobilization	1	0	06NOV00A	06NOV00A
BK99010401	99.01.04.01	100	Initiate Job-Site Presence	1	0	06NOV00A	06NOV00A
PROJECT MANAGEMENT							
BK99220101	99.22.01.01	0	PROJECT MANAGEMENT	245	167	06NOV00A	27DEC01
BID PACKAGE PREP/AWARD							
BK32010394	32.01.03.94	0	Submit Subcontractors Plans & Submittals	12	12	02MAY01*	17MAY01
BK99229		0	Review Subcontractors Plans & Submittals	12	12	02MAY01	17MAY01
BK9922		0	Subcontractor Plans Due	0	0		17MAY01
BK992293		0	Award Subcontracts	0	0		24MAY01
MOBILIZATION & PREPARATORY WORK							
BK32010292	32.01.02.92	0	Subcontractor Mobilization	1	1	24MAY01	24MAY01
BK32221209	32.22.12.09	0	Subcontractor Bonds	1	1	24MAY01	24MAY01
TESTING & ANAYLSIS							
BK31020601	31.02.06.01	100	GEOPROBE SAMPLING	10	0	06NOV00A	21NOV00A
BK31020602	31.02.06.02	100	ON-SITE LAB FOR GEOP	10	0	06NOV00A	21NOV00A
BK31020604	31.02.06.04	0	Waste Characterization	177	114	30NOV00A	09OCT01
DATA EVALUATION & MANAGEMENT							
BK31021491	31.02.14.91	0	Data Evaluation & Management	150	150	24MAY01*	31DEC01
GROUNDWATER TREATMENT							
BK32133292	32.13.32.92	0	Injection Point Installation	5	5	18JUN01	22JUN01
BK32133293	32.13.32.93	0	Primary Treatment	9	9	25JUN01	06JUL01
BK32133294	32.13.32.94	0	First Polish Treatment	4	4	09JUL01	12JUL01
SITE RESTORATION							
BK32200402	32.20.04.02	0	Site Restoration	5	5	03OCT01*	10OCT01



Start Date	25JUL00
Finish Date	31DEC01
Data Date	27APR01
Run Date	17MAY01 10:40

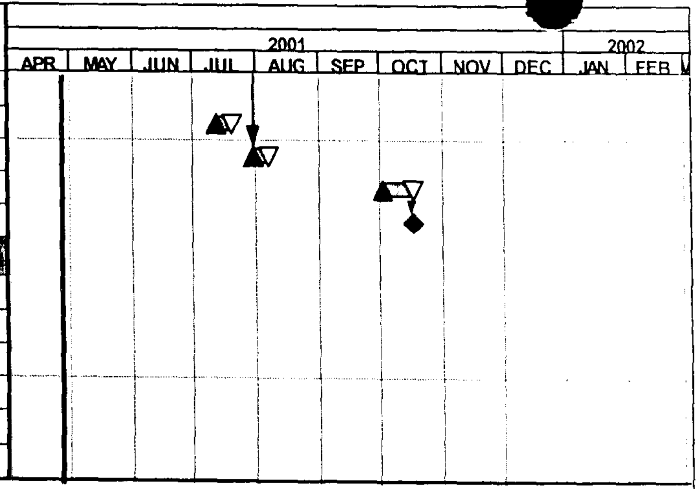
Early Bar
Progress Bar
Critical Activity

NFAC - CO47

CTO #0047 - 160027 - NSB Kings Bay
CTO COMPLETION SCHEDULE
NAVY RAC SOUTHERN DIVISION

CH2MHILL Constructors Inc

Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish
POST CONSTRUCTION							
BK32210591	32.21.05.91	0	Subcontractor Demobilization	5	5	13JUL01*	19JUL01
BK	31.21.06.91	0	Status Reports for Injection	5	5	31JUL01	06AUG01
BK31210605	31.21.06.05	0	Construction Documentation Reports	10	10	03OCT01*	17OCT01
BK31210606	31.21.06.06	0	Submit Construction Documentation Reports	0	0		17OCT01
ADDITIONAL SAMPLING							
TESTING & ANAYLSIS							
BK33020601	33.02.06.01	100	GEOPROBE SAMPLING	5	0	08JAN01A	12JAN01A
BK33020602	33.02.06.02	100	Additional Off-Site GW Analysis	10	0	08JAN01A	22JAN01A
BK33020603	33.02.06.03	100	2nd GEOPROBE SAMPL	1	0	23FEB01A	23FEB01A
DATA EVALUATION & MANAGEMENT							
BK33021491	33.02.14.91	100	Data Evaluation & Management	24	0	08JAN01A	19JAN01A



Appendix B

Submittal Register

Submittal Register

C[illegible]tract Number: N62467-98-D-0995			CTO No.: 0047		CTO Title: Groundwater Remediation at Site 11, Old Camden County Landfill					Location: NSB Kings Bay, Georgia				Contractor: CH2M HILL Constructors, Inc./ J.A. Jones Environmental Services Company		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item Number	Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI/JAJ Review Date	CCI/JAJ Disposition	CCI/JAJ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
		General Paragraphs															
		SD-09, Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1	--	A Work Plan	--	CO/COTR		1	05/18/2001										
2	--	B Narrative	--	CO/COTR		1	05/18/2001										
3	--	C Technical Specifications	--	CO/COTR		1	05/18/2001										
4	--	D Health and Safety Plan	--	CO/COTR		1	05/18/2001										
5	--	E QA/QC Plan	--	CO/COTR		1	05/18/2001										
6	--	F Sampling and Analysis Plan	--	CO/COTR		1	05/18/2001										
7	--	G Decontamination Procedures	--	CO/COTR		1	05/18/2001										
8	--	H Material Safety Data Sheets	--	CO/COTR			As Required										
		SD-18, Records	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9	--	A As Built Records	--	ROICC			As Required										
10	--	B Test Results Summary Report	--	ROICC			Monthly										
11	--	C Daily Production Report	--	ROICC			Daily										
12	--	D Daily QC Report	--	ROICC			Daily										
13	--	E Rework Items List	--	ROICC			Monthly										
14	--	F Permits	--	ROICC			As Required										
15	--	G Construction Completetion Report	--	ROICC			As Required										
		SD-02, Manufacturer's Catalog Data	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
[illegible]	--	A Chemical Oxidation Injection Point Screen	--	CCI/JAJ			As Required										
17	--	B Chemical Oxidation Injection Point Riser	--	CCI/JAJ			As Required										
18	--	C Chemicial Oxidation Injection Equipment (including rig, pump, etc)	--	CCI/JAJ			As Required										
19	--	D Chemical Oxidation Injection Materials	--	CCI/JAJ			As Required										
20	--	E Vegetable Oil Injection Point Screen	--	CCI/JAJ			As Required										
21	--	F Vegetable Oil Injection Point Riser	--	CCI/JAJ			As Required										
22	--	G Vegetable Oil Injection Equipment (including rig, pump, etc)	--	CCI/JAJ			As Required										
23	--	H Vegetable Oil Injection Materials	--	CCI/JAJ			As Required										
		SD-04, Drawings	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24	--	A Final Chemical Oxidation Injection Plan	--	CCI/JAJ			As Required										
25	--	B Final Vegetable Oil Injection Plan	--	CCI/JAJ			As Required										
26	--	C Final As-builts	--	ROICC			As Required										
		SD-12, Field Test Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27		A Calibration Tests	--	CCI/JAJ			As Required										
28	--	B Sediment Analytical Results	--	ROICC			As Required										
29	--	C Electronic Copy of All Analytical Results	--	ROICC			As Required										
		SD-13, Certification	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30	--	A Laboratory Certification	--	ROICC			As Required										
		SD-18, Records	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31	--	A Well Driller Certification	--	CCI/JAJ			As Required										
32	--	B Permits	--	CCI/JAJ			As Required										
33	--	C MSDS Sheets	--	CCI/JAJ			As Required										
	DIV 1	**Waste Sampling Requirements**															
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
[illegible]	--	A Sample Log	--	ROICC			Monthly										
		SD-12, Field Test Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
35	--	A Disposal Sample Analytical Results	--	ROICC			As Required										
36	--	B Electronic Copy of All Analytical Results	--	ROICC			As Required										

0551BB12

Submittal Register

Contract Number: N62467-98-D-0995				CTO No.: 0047		CTO Title: Groundwater Remediation at Site 11, Old Camden County Landfill					Location: NSB Kings Bay, Georgia				Contractor: CH2M HILL Constructors, Inc./ J.A. Jones Environmental Services Company		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item Number	Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI/JAJ Review Date	CCI/JAJ Disposition	CCI/JAJ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
		SD-13, Certification	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
37	--	A Laboratory Certification	--	ROICC			As Required										
	DIV 2	**Transportation and Disposal of Contaminated Material**															
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75	--	A Treatment Facility Permit	--	ROICC			As Required										
		SD-18, Records	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
76	--	A Shipment Manifests	--	ROICC			As Required										
77	--	B Treatment and Disposal Certificate	--	ROICC			As Required										

Appendix C

Testing Plan and Log

Testing Plan and Log

CH2M HILL Constructors, Inc.

Contract Number: N62467-98-D-0995		CTO No.: 0047		CTO Title: Groundwater Remediation at Site 11, Old Camden County Landfill				Location: NSB Kings Bay, Kings Bay, GA		
A	B	C	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Proposed Lab	Sampled By	Tested By	Test Location	Frequency	Date Test Made	Test Results	Date Results Forwarded	Remarks
SEDMENT ANALYSES										
SAP	Sediment				New Injection Points	1/Depth Interval				Bioavailable Iron; FOC; Soil Bulk Density
DISPOSAL ANALYSES										
SAP	Water				Waste	As Req.				Purge/Decon/Etc.
SAP	Solids				Waste	As Req.				DPT IDW

Appendix D

Health and Safety Plan

Health and Safety Plan
Groundwater Remediation at Site 11
Old Camden County Landfill
Naval Submarine Base Kings Bay
Kings Bay, Georgia

Revision No. 01

Contract No. N62467-98-D-0995
Contract Task Order No. 0047

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

September 2001

Contents

Attachments

Figures

Tables

Tables Continued

Acronyms

°F	degrees Fahrenheit
ALARA	as low as reasonably achievable
APR	air-purifying respirator
ATL	Atlanta, Georgia
CCI	CH2M HILL Constructors, Inc.
CNS	central nervous system
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
dBA	decibel A-rated
DOT	Department of Transportation
FA	first aid
FID	flame ionization detector
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
JAX	Jacksonville, Florida
lb	pound
LEL	lower explosive limit
mg/m^3	milligrams per cubic meter
MSDS	Material Safety Data Sheet
mW/cm^2	milliwatt per square centimeter
NAVFAC	Naval Facilities Engineering Command
NDG	nuclear density gauge
NSB	Naval Submarine Base
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
PDF	personal flotation device
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
RMSF	Rocky Mountain Spotted Fever
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	standard of practice
STEL	short-term exposure limit
SZ	support zone
TBD	to be determined
TMCC	truck-mounted crash cushion
TSDF	treatment, storage, and disposal facility

This health and safety plan (HSP) will be kept on the site during field activities and will be reviewed and updated as necessary. The plan adopts, by reference, the standards of practice (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual,* and CH2M HILL Constructors, Inc. (CCI) Health and Safety Guidelines as appropriate. The Site Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the content of this plan. Site personnel must sign Attachment 1. In addition, this plan adopts procedures in the work plan for the project.

1.0 Project Information and Description

Client or Owner: Southern Division, Naval Facilities Engineering Command (NAVFAC)

Project No: CTO-0047

CCI Project Manager: Mike Halil/J.A. Jones

Office: Jacksonville, Florida (JAX)

Site Name: Naval Submarine Base (NSB) Kings Bay

Site Address: Kings Bay, Georgia

Date Health and Safety Plan Prepared: September 2000

Date(s) of Initial Visit: September 2000

Date(s) of Site Work: September – December 2000

Site Access: Access is the Main Gate on Kings Bay Road.

Site Size: The site occupies 16,168 acres in Camden County Georgia.

Site Topography: flat coastal plain

Prevailing Weather: hot humid summers with the potential for hurricanes

Site Description and History: NSB Kings Bay was commissioned in July 1978. In May 1980, Kings Bay was named the Atlantic Fleet homeport of the next generation of fleet ballistic submarines, Trident and Ohio-class SSBN.

The old Camden County Landfill was incorporated into the base. The landfill was used for municipal solid waste disposal in the 1960s and 1970s. At some point perchloroethylene was disposed of in the landfill, which resulted in groundwater contamination.

2.0 Project Organization and Tasks to be Performed under this Plan

2.1 Project Organization

Client: Southern Division, NAVFAC

CCI:
Project Manager: Mike Halil/J.A. Jones/JAX
Site Superintendent: TBD
Refer to Section 4.0 for field staff.

Contractors and Subcontractors: Refer to Section 4.2.

2.2 Description of Tasks

Refer to project documents (i.e., work plan) for detailed task information. A health and safety risk analysis has been performed for each task and is incorporated in this HSP through task-specific hazard controls and requirements for monitoring and protection. Tasks in addition to those listed below require an approved amendment to this plan before additional work begins. Refer to Section 10.2 for procedures related to tasks that do not involve hazardous waste operations and emergency response (HAZWOPER).

2.2.1 HAZWOPER-Regulated Tasks

HAZWOPER-regulated tasks include:

- Fenton's Reagent chemical oxidation injection
- Vegetable oil injection
- Site restoration

2.2.2 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state HAZWOPER regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-HAZWOPER-trained personnel. **Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites.**

TASKS	CONTROLS
• Site Restoration	• Brief on hazards, limits of access, and emergency procedures

A task hazard analysis is provided in Table 2-1.

TABLE 2-1
Task Hazard Analysis

Potential Hazards	Tasks		
	Fenton's Reagent Chemical Oxidation Injection	Vegetable Oil Injection	Groundwater monitoring
Electrical HS-23	X	X	
Fire Protection HS-22	X	X	X
Forklifts HS-48	X	X	
Hand and Power Tools HS-50	X	X	X
Lockout/ Tagout, HS-33	X	X	X
Manual Lifting HS-29	X	X	X
Noise >85dBa HS-39	X	X	X
Traffic Control Hs-24	X	X	X
Visible lighting	X	X	X

2.2.3 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. Table 2-2 lists safe work practices and control measures used to reduce or eliminate potential hazards for the activities associated with this project. Inspection and training requirements for equipment are listed in Table 2-3. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CCI employees and subcontractors must remain aware of the hazards affecting them regardless of the party responsible for controlling the hazards. CCI employees and subcontractors who do not understand any of these provisions should contact the SHSS for clarification.

In addition to controls specified in this section, activity Self-Assessment Checklist is provided in Attachment 5. This checklist is to be used to assess the adequacy of CCI and subcontractors site-specific safety requirements. Objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing gaps. A Self-Assessment Checklist will be completed weekly and returned to the Senior Project Manager, with a copy to HSM.

TABLE 2-2
Recommended Safety Controls

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
General Hazards	Reduce general safety hazards found at most sites; referenced in CH2M HILL SOP HS-20	Site work will be performed during daylight hours whenever possible. Work conducted during hours of darkness will require enough illumination intensity to read a newspaper without difficulty. Hearing protection worn in areas where you need to shout to hear someone within 3 feet. Good housekeeping must be maintained at all times in project work areas. Common paths of travel established and kept free from accumulation of materials. Provide slip-resistant surfaces, ropes, and /or other devices to be used. Specific areas should be designated for the proper storage of materials. Tools, equipment, materials, and supplies will be stored in an orderly manner. As work progresses, scrap and unessential materials must be neatly stored or removed from the work area. Containers should be provided for collecting trash and other debris and will be removed at regular intervals. Spills will be cleaned up. Oil and grease will be cleaned from walking surfaces.
Hazard Communication	Comply with the Hazard Communication Standard informing worker about the chemical to which they may be exposed; referenced in 29 CFR 1926 and CH2M HILL SOP HS-05	Complete an inventory of chemicals brought on site by CCI using the Project-Specific Chemical Hazard Communication Form provided in Attachment 2. Confirm inventory of chemicals brought on site by CCI subcontractors is available. Confirm locations of Material Safety Data Sheets (MSDSs) from client, contractors, and subcontractors for chemicals to which CCI employees potentially are exposed. Before or as the chemicals arrive onsite, obtain an MSDS for each hazardous chemical. Label chemical containers with the identity of the chemical and with hazard warnings, and store properly. Give employees required chemical-specific HAZCOM training using the Chemical-Specific Tracking Form provided in Attachment 3.
Trichloroethylene (TCE)	Reduce the exposure potential to TCE during remediation activities.	Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas. Skin absorption is a potential route of TCE exposure. TCE is considered a "Confirmed Human Carcinogen." A short-term exposure limit (STEL) of 100 ppm exists for this material. TCE has a chloroform like odor. Respiratory protection and other exposure controls selection will be based on the most recent exposure monitoring results obtained from the health and safety manager.

TABLE 2-2
Recommended Safety Controls

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
General Hazards	Reduce general safety hazards found at most sites; referenced in CH2M HILL SOP HS-20	Site work will be performed during daylight hours whenever possible. Work conducted during hours of darkness will require enough illumination intensity to read a newspaper without difficulty. Hearing protection worn in areas where you need to shout to hear someone within 3 feet. Good housekeeping must be maintained at all times in project work areas. Common paths of travel established and kept free from accumulation of materials. Provide slip-resistant surfaces, ropes, and /or other devices to be used. Specific areas should be designated for the proper storage of materials. Tools, equipment, materials, and supplies will be stored in an orderly manner. As work progresses, scrap and unessential materials must be neatly stored or removed from the work area. Containers should be provided for collecting trash and other debris and will be removed at regular intervals. Spills will be cleaned up. Oil and grease will be cleaned from walking surfaces.
Hazard Communication	Comply with the Hazard Communication Standard informing worker about the chemical to which they may be exposed; referenced in 29 CFR 1926 and CH2M HILL SOP HS-05	Complete an inventory of chemicals brought on site by CCI using the Project-Specific Chemical Hazard Communication Form provided in Attachment 2. Confirm inventory of chemicals brought on site by CCI subcontractors is available. Confirm locations of Material Safety Data Sheets (MSDSs) from client, contractors, and subcontractors for chemicals to which CCI employees potentially are exposed. Before or as the chemicals arrive onsite, obtain an MSDS for each hazardous chemical. Label chemical containers with the identity of the chemical and with hazard warnings, and store properly. Give employees required chemical-specific HAZCOM training using the Chemical-Specific Tracking Form provided in Attachment 3.
Physical Conditions		
Energized Electrical	Reduce the hazards when dealing with energized electrical circuits; referenced in 29 CFR 1926.400 and CH2M HILL SOP-23	Only qualified personnel permitted to work on unprotected energized electrical systems. Electrical wiring and equipment will be de-energized prior to conducting work unless it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations. Electrical systems will be considered energized until lockout/tagout procedures are implemented. The Energized Electrical Work permit provided in Attachment 4 of this plan must be completed prior to working on unprotected energized electrical systems. Follow control measures &procedures identified on Energized Electrical Work permit.

TABLE 2-2
Recommended Safety Controls

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Fire Protection	To reduce the incidents of fires and provide resources to fight fires; referenced in 29 CFR 1926.150 and CH2M HILL SOP-22	Fire extinguishers will be provided so travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must: 1) be maintained in a fully charged and operable condition, 2) be visually inspected each month, and 3) undergo a maintenance check each year. The area in front of extinguishers must be kept clear. Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations. Combustible materials stored outside should be at least 10 feet from any building. Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site. Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.
Lockout/Tagout	Reduce the hazards of accidental machine startups while out of service; referenced in 29 CFR 1910.147, 29 CFR 1926. 417, and CH2M HILL SOP HS-33	Do not work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented. Staff working under a lockout/tagout procedure must complete the CH2M HILL Lockout/Tagout training course. Project-specific training may also be required on site-specific lockout/tagout procedures. Standard lockout/tagout procedures include the following six steps: Notify all personnel in the affected area of the lockout/tagout, Shut down the equipment using normal operating controls, Isolate all energy sources, Apply individual lock and tag to each energy isolating device, Relieve or restrain all potentially hazardous stored or residual energy, and Verify that isolation and de-energization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin. All safe guards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal. Do not remove another person's lock or tag.

TABLE 2-2
Recommended Safety Controls

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Manual Lifting	Reduce hazards encountered when lifting loads; referenced in CH2M HILL SOP HS-29	Proper lifting techniques must be used when lifting any object. Plan storage and staging to minimize lifting or carrying distances. Split heavy loads into smaller loads. Use mechanical lifting aids whenever possible. Have someone assist with the lift especially for heavy or awkward loads. Ensure that the path of travel is clear prior to the lift.
Noise	Reduce the exposure to noise; referenced in 29 CFR 1926.101 and 29CFR 1910.95, and CH2M HILL SOP HS-39	Noise areas will be evaluated at the start of the project and at any time new machinery is added to the process. Hearing protection will be worn whenever levels in excess of 85 dBA are exceeded as in areas where you must raise your voice to communicate at a distance of 3 feet or less. Personnel will be trained in the proper installation techniques for ear protection that fits in the ear canal. Hearing protective devices will be kept clean and sanitary be between uses. Noise measurements may be required by the SSHS to determine protection areas. These areas need to be posted with appropriate warning signs.
Traffic Control	Reduce accidents related to control of traffic and impacts; referenced in CH2M HILL SOP HS-24	Exercise caution when exiting traveled way or parking along street; avoid sudden stops, use flashers, etc. Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests. Eye protection should be worn to protect from flying debris. Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc. Always remain aware of an escape route – behind an established barrier, parked vehicle, guardrail, etc. Always pay attention to moving traffic – never assume drivers are looking out for you Work as far from traveled way as possible to avoid creating confusion for drivers. When workers must face away from traffic, a "buddy system" should be used, where one worker is looking towards traffic.

TABLE 2-3
Equipment Inspection and Training Requirements

Equipment To Be Used	Inspection Requirements	Training Requirements
Forklifts, HS-48	Forklifts will be inspected by the operator prior to use. No part of a load must pass over any personnel. Forklifts left unattended must be immobilized and secured against accidental movement and forks, buckets or attachments must be in lowered position or be firmly supported. No load may exceed the maximum rated load and loads must be handled in accordance with the height and weight restrictions on the load chart. When a load is in the raised position, the controls must be attended by an operator. If an operator does not have a clear view of the path, a signaler must be used. Loads must be carried as close to the ground or floor as the situation permits. Loads that may tip or fall must be secured. Where a forklift is required to enter or exit a vehicle to load or unload, the vehicle must be immobilized and secured against accidental movement. Forklifts will not be used to support, raise or lower workers. Forklifts operators will wear seatbelts at all times. Concentrations of carbon monoxide created by forklift operation indoors must be monitored when potential exists for reaching or exceeding permissible exposure limits. Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.	Only authorized and trained personnel are permitted to operate forklifts.
Motor Vehicles (Off highway job site) HS-47	All vehicles will have working safety equipment including: two headlights, brake lights, audible warning device, and a reverse signal audible above surrounding noise levels. Cabs shall be equipped with windshields and powered wipers. All vehicles in use will be inspected at the beginning of each shift and a CCI Heavy Equipment Checklist completed (or the subcontractor's equivalent document.)	Only state licensed personnel may operate company vehicles.

TABLE 2-3
Equipment Inspection and Training Requirements

Equipment To Be Used	Inspection Requirements	Training Requirements
Crane or Other Lifting Devices, HS-44	Maintain safe distance from operating cranes and stay alert of crane movement. Avoid positioning between fixed objects and operating cranes and crane pinch points, remain outside of crane swing and turning radius. Never turn your back on operating cranes. Approach cranes only after receiving the operator's attention. The operator will acknowledge your presence and stop movement of the crane. Never approach operating cranes from the side or rear where the operator's vision is compromised. When required to work in proximity to operating cranes, wear high-visibility vests to increase visibility to operators. For work performed after daylight hours, vests will be made of reflective material or include a reflective stripe or panel. Stay clear of all hoisting operations. Loads will not be hoisted overhead of personnel. Cranes will not be used to lift or lower personnel. If crane becomes electrically energized, personnel will be instructed not to touch any part of the crane or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party will be contacted to have line de-energized prior to approaching the crane. Do not exceed hoist load limits. Ensure load is level and stable before hoisting Inspect all rigging equipment prior to use. Do not use defective rigging for any reason. Only use rigging equipment for the purpose it was designed and intended Stay clear of all hoisting operations. Loads will not be hoisted overhead of personnel. Hoists will not be used to lift or lower personnel. Do not exceed hoist load limits. Ensure load is level and stable before hoisting Inspect all rigging equipment prior to use. Do not use defective rigging for any reason. Only use rigging equipment for the purpose it was designed and intended.	Only certified crane operators are permitted to operate cranes..

3.0 Hazard Evaluation and Control

3.1 Heat and Cold Stress

Reference CH2M HILL SOP HS-09, Heat and Cold Stress

3.1.1 Preventing Heat Stress

The following guidelines relate to heat stress prevention:

- Drink 16 ounces of water before beginning work, such as in the morning or after lunch. Disposable (e.g., 4-ounce) cups and water maintained at 50 to 60 degrees Fahrenheit (°F) should be available. Under severe conditions, drink one to two cups every 20 minutes, for a total of 1 to 2 gallons per day. Take regular breaks in a cool, preferably air-conditioned, area. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours. Monitor for signs of heat stress.
- Acclimate to site work conditions by slowly increasing workloads; e.g., do not begin site work with extremely demanding activities.
- Use cooling devices, such as cooling vests, to aid natural body ventilation. The devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- During hot weather, conduct field activities in the early morning or evening if possible.
- Provide adequate shelter to protect personnel against radiant heat (sun, flames, hot metal), which can decrease physical efficiency and increase the probability of heat stress.
- In hot weather, rotate shifts of workers.
- Maintain good hygiene standards by frequently changing clothing and by showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should consult medical personnel.

3.1.2 Symptoms and Treatment of Heat Stress

The symptoms of heat stress are listed in Table 3-1.

TABLE 3-1
Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash (*miliaria rubra*, "prickly heat")	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!

3.1.3 Heat-Stress Monitoring

For field activities part of ongoing site work activities in hot weather, the following procedures should be used to monitor the body's physiological response to heat and to estimate the work-cycle/rest-cycle when workers are performing moderate levels of work. These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (greater than 50 percent), or when the workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute, or 20 beats per minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 110 beats per minute, or 20 beats per minute above resting pulse.

3.1.4 Preventing Cold Stress

The following guidelines relate to cold stress prevention:

- Be aware of the symptoms of cold-related disorders, and ***wear proper clothing for the anticipated fieldwork***.

- Consider monitoring the work conditions and adjusting the work schedule, using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- *Wind-Chill Index.* This measure relates the dry bulb temperature and the wind velocity. It is used only to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index sometimes is limited in its usefulness because the index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it is used only as a guideline to warn workers when they are in a situation that can cause cold-related illnesses. Used in conjunction with the NSC guidelines, the wind-chill index provides a starting point for adjusting work and warm-up schedules.
- ***NSC Guidelines for Work and Warm-Up Schedules.*** The cold-exposure limits recommended by the NSC can be used in conjunction with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; ***workers should be monitored for symptoms of cold-related illness.*** If symptoms are not observed, the work duration can be increased.
- The wind-chill index and the NSC guidelines are in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual,* SOP HS-09.

3.1.5 Symptoms and Treatment of Cold Stress

The symptoms and treatment of cold stress are listed in Table 3-2.

TABLE 3-2
Symptoms and Treatment of Cold Stress

	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Rewarm area quickly in warm–but **not** hot–water. Have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but **not** coffee or alcohol. Get medical attention.

3.2 Locating Buried Utilities

3.2.1 Local Utility Mark-Out Service

The Base Civil Engineer will be responsible for marking utilities.

3.2.2 Procedures for Locating Buried Utilities

Procedures for locating buried utilities are listed as follows:

- Where available, obtain utility diagrams for the facility.

- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural-gas lines, and fuel tanks and lines.
- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary, clear locations with a utility-locating instrument (e.g., metal detector).
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually. Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SHSS should confirm that arrangement.

3.3 Biological Hazards and Controls

Biological hazards and controls are listed in Table 3-3.

TABLE 3-3
Biological Hazards and Controls

Hazard and Location	Control Measures
Snakes typically are found in underbrush and tall grassy areas.	If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Carry the victim or have him/her walk slowly if the victim must be moved. Try to identify the type of snake: note color, size, patterns, and markings.
Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas.	Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.
Exposure to **bloodborne pathogens** may occur when rendering first aid or CPR, when coming into contact with medical/other infectious material, with landfill waste or waste streams containing such infectious material.	Training is required before a task involving potential exposure is performed. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.
Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic.	Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSS and/or the buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

3.4 Tick Bites

Reference CH2M HILL HS-03, Tick Bites

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size.

3.4 Tick Bites And Mosquito Bites

3.4.1 Ticks

Reference CH2M HILL HS-03, Tick Bites

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size.

Prevention against tick bites includes avoiding tick areas; wearing tightly woven light-colored clothing with long sleeves and wearing pant legs tucked into boots or socks; spraying **only outside** of clothing with insect repellent containing permethrin or permanone, and spraying skin with DEET; and checking yourself frequently for ticks and showering as soon as possible. To prevent chemical repellents from interfering with sample analyses, exercise care while using repellents during the collection and handling of environmental samples.

If bitten by a tick, carefully remove the tick with tweezers, grasping the tick as close as possible to the point of attachment while being careful not to crush the tick. After removing the tick, wash your hands and disinfect and press the bite area. The removed tick should be saved. Report the bite to human resources personnel.

Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF): Lyme - a rash that looks like a bullseye with a small welt in the center; RMSF - a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, bone pain may develop. If symptoms appear, seek medical attention.

3.4.2 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southeastern United States it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35 percent) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.

- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3 to 15 days.

If you have any questions or to report any suspicious symptoms, contact the project Health and Safety Manager.

3.5 Radiological Hazards and Controls

Refer to CH2M HILL's Corporate Health and Safety Program, Program and Training Manual, and Corporate Health and Safety Program, Radiation Protection Program Manual, for standards of practice for operating in contaminated areas. There are no known radiological hazards associated with this project.

3.6 Hazards Posed by Chemicals Brought on the Site

3.6.1 Hazard Communication

Reference CH2M HILL Hazard Communication Manual

CH2M HILL's *Hazard Communication Program Manual,* which is available from area or regional offices and from the Corporate Human Resources Department in Denver, Colorado. The project manager is to request MSDSs from the client or from the contractors and the subcontractors for chemicals to which CCI employees potentially are exposed. The SHSS is to do the following:

- Give employees required site-specific hazard communication (HAZCOM) training.
- Confirm that inventory of chemicals brought on the site by subcontractors is available.
- Before or as chemicals arrive on the site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with identity of chemical and with hazard warnings, if any.

The chemical products listed in Table 3-4 will be used on the site. Refer to Attachment 2 for MSDSs.

TABLE 3-4
Chemical Hazards

Chemical	Quantity	Location
Hydrogen Peroxide	Tanker or Barrels	Exclusion Zone
Ferrous Sulfate	Barrels	Exclusion Zone
Vegetable Oil	Barrels	Exclusion Zone
Alconox/Liquinox (detergent)	< 1 liter, powder/liquid	Support/Decontamination Zone

3.6.2 Shipping and Transportation of Chemical Products

Reference CH2M HILL's Procedures for Shipping and Transporting Dangerous Goods

Nearly all chemicals brought to the site are considered hazardous materials by the DOT. All staff who ship the materials or transport them by road must receive the CH2M HILL training in shipping dangerous goods. Hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

3.7 Contaminants of Concern

Reference Project Files for More-Detailed Contaminant Information

Contaminants of concern are listed in Table 3-5.

TABLE 3-5
Contaminants of Concern

Contaminant	Maximum[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
1,2-Dichloroethene	GW: 2 μg/L	200 ppm	1,000 ppm	CNS depression, eye irritation	9.65
Tetrachloroethylene (PCE)	GW: 10,000 μg/L	25 ppm	150 Ca	Eye, nose, and throat irritation; nausea; flushed face and neck; vertigo; dizziness; sleepiness; skin redness; headache; liver damage	9.32
Trichloroethylene (TCE)	GW: 7 μg/L	50 ppm	1,000 Ca	Headache, vertigo, visual disturbance, eye and skin irritation, fatigue, giddiness, tremors, sleepiness, nausea, vomiting, dermatitis, cardiac arrhythmia, paresthesia, liver injury	9.45
Vinyl Chloride	GW: 120 μg/l	1 ppm	NL Ca	Weakness, abdominal pain, gastrointestinal bleeding, enlarged liver, pallor or cyanosis of extremities	9.99

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).
[b] Appropriate value of PEL, REL, or TLV listed.
[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.
[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.
ppm = parts per million
eV – electron volt

3.8 Potential Routes of Exposure

Potential routes of exposure include:

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.0.
- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 5.0 and 6.0, respectively.

- **Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before eating, drinking, or smoking).

4.0 Personnel

4.1 CCI Employee Medical Surveillance and Training

Reference CH2M HILL SOP HS-01, Medical Surveillance, and HS-02, Health and Safety Training

The employees listed in Table 4-1 are enrolled in the CH2M HILL Comprehensive Health and Safety Program and meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SHSS" have received 8 hours of supervisor and instrument training and can serve as SHSS for the level of protection indicated. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones that involve the potential for exposure to health and safety hazards. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and cardiopulmonary resuscitation (CPR). At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones that involve the potential for exposure to health and safety hazards. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL's SOP HS-04, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities, before being assigned fieldwork.

TABLE 4-1
Project Personnel Safety Certifications

Employee Name	Office	Responsibility	SHSS/FA-CPR
Mike Halil	JAX	Project Manager	FA-CPR
TBD		Site Superintendent	
Jose Melendez	JAX	SHSS	
Eric Burrell	ATL	QC Manager	Level C SHSS; FA-CPR
Angelo Liberatore	ATL	H&S Manager	Level B SHSS; FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 Client

Contact Name: Eva Clement, Southern Division, NAVFAC, North Charleston, South Carolina

4.2.2 CCI

Project Manager: Mike Halil/J.A. Jones/ JAX

Health and Safety Manager: Angelo Liberatore/ATL

Site Superintendent: TBD

Site Health and Safety Specialist: TBD

The SHSS is responsible for contacting the site superintendent and the project manager. In general, the project manager either will contact or will identify the client contact. The HSM should be contacted as appropriate. The SHSS or the project manager must notify the client and the HSM when a serious injury or a death occurs or when health and safety inspections by OSHA or other agencies are conducted. Refer to Sections 10 through 12 for emergency procedures and phone numbers.

4.2.3 Subcontractors

Reference Section 3, Corporate Health and Safety Program Manual

When specified in the project documents (e.g., contract), this plan may cover CCI subcontractors. However, this plan does not address hazards associated with tasks and equipment that the subcontractor has expertise in (e.g., operation of drill rig). Specialty subcontractors are responsible for health and safety procedures and plans specific to their work. Specialty subcontractors are to submit plans to CCI for review and approval before the start of fieldwork. Subcontractors must comply with the established health and safety plan(s). CCI must monitor and enforce compliance with the established plan(s).

General health and safety communication with subcontractors contracted with CCI and covered by this plan is to be conducted as follows:

- Request that the subcontractor, if a specialty subcontractor, submit a safety or health plan applicable to their expertise (e.g., drill-rig safety plan or nuclear density gauge [NDG] health plan); attach the reviewed plan.
- Supply subcontractors with a copy of this plan, and brief them on its provisions.
- Direct health and safety communication to the subcontractor-designated safety representative.
- Notify the subcontractor-designated representative if a violation of the plan(s) is observed. Specialty subcontractors are responsible for mitigating hazards in which they have expertise.
- If a hazard condition persists, inform the subcontractor. If the hazard is not mitigated, stop affected work as a last resort and notify the project manager.
- When an apparent imminent danger exists, promptly remove all affected personnel. Notify the project manager.
- Make clear that consistent violations of the health and safety plan by a subcontractor may result in termination of the subcontract.

5.0 Personal Protective Equipment

Reference CH2M HILL SOP HS-07, Personal Protective Equipment; HS-08, Respiratory Protection

5.1 PPE Specifications

PPE specifications are listed in Table 5-1.

TABLE 5-1
PPE Specifications[a]

Task	Level	Body	Head	Respirator[b]
General work uniform when no chemical exposure is anticipated	D	Work clothes; steel-toe, steel-shank leather work boots; work gloves	Hardhat[c] Safety glasses Ear protection[d]	None required
Fenton Injection,	Modified D	**COVERALLS:** Uncoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant leather or arimid-fiber glove.	Hardhat[c] Splash shield[c] Safety glasses Ear protection[d]	None required
NOT APPROVED FOR THIS ACTIVITY	C	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H[e] cartridges or equivalent
NOT APPROVED FOR THIS ACTIVITY	B	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA): MSA Ultralite, or equivalent

[a] Modifications are as indicated. CCI will provide PPE to only CCI employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to determined by the SHSS.
[d] Ear protection should be worn while working around drill rigs or other noise-producing equipment or when conversations cannot be held at distances of 3 feet or less without shouting. Refer to Section 6 for other requirements.
[e] The GME-H cartridge is the new standard-issue cartridge. Available stock of the previously standard GMC-H cartridges may be used for tasks covered by this plan.

5.2 Upgrading or Downgrading Level of Protection

The reasons for upgrading or downgrading the PPE level are as follows:

- Upgrade
  - Request from individual performing task
  - Change in work task that will increase contact or potential contact with hazardous materials
  - Occurrence or likely occurrence of gas or vapor emission
  - Known or suspected presence of dermal hazards
  - Instrument action levels (Section 6) exceeded
- Downgrade
  - New information indicating that situation is less hazardous than originally thought
  - Change in site conditions that decreases the hazard
  - Change in work task that will reduce contact with hazardous materials

Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been specified in Section 5.0 and an SHSS who meets the requirements specified in Section 4.1 is present.

6.0 Air Monitoring Specifications

Reference CH2M HILL SOP HS-06, Air Monitoring

Air monitoring specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specifications

Instrument	Action Levels[a]	Frequency[b]	Calibration
PID MiniRAE with 10.6eV lamp or equivalent	0 – 25pm – Level D > 25 ppm – Stop Work	Initially and periodically during task	Daily

[a] Action levels apply to sustained breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; generally, every 5 to 15 minutes is acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time and measurement result, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).
ppm = parts per million
Action Levels will be established in Site Specific HSP, when concentrations for Contaminants of Concern are evaluated.

6.1 Calibration Specifications

Calibration specifications are listed in Table 6-2. Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures.

TABLE 6-2
Calibration Specifications

Instrument	Calibration Gas	Span	Reading	Method
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF=53	53 ppm +5 ppm	1.5 lpm REG T-Tubing

ppm = parts per million

6.2 Air Sampling

Sampling may be required by other OSHA regulations where exposure to certain contaminants may exist. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

6.2.1 Method Description

Real time air monitoring will be performed. Contact HSM if assistance is required.

6.2.2 Personnel and Areas

Results must be sent immediately to the HSM. Regulations may require reporting to monitored personnel. Results reported to: HSM: Angelo Liberatore/ATL.

7.0 Decontamination

Reference CH2M HILL SOP HS-13, Decontamination

The SHSS must monitor the effectiveness of the decontamination procedures. Decontamination procedures found to be ineffective will be modified by the SHSS.

7.1 Decontamination Specifications

Decontamination specifications are listed in Table 7-1.

TABLE 7-1
Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse • Glove wash/rinse • Body-suit removal • Hand wash/rinse • Face wash/rinse • Shower ASAP • **PPE-disposal method** Dispose in drums • **Water-disposal method** Dispose in drums	• Wash/rinse equipment • Solvent-rinse equipment • **Solvent-disposal method** Dispose in drums	• Power wash • Steam clean • **Water-disposal method** Dispose in drums

7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a typical establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.

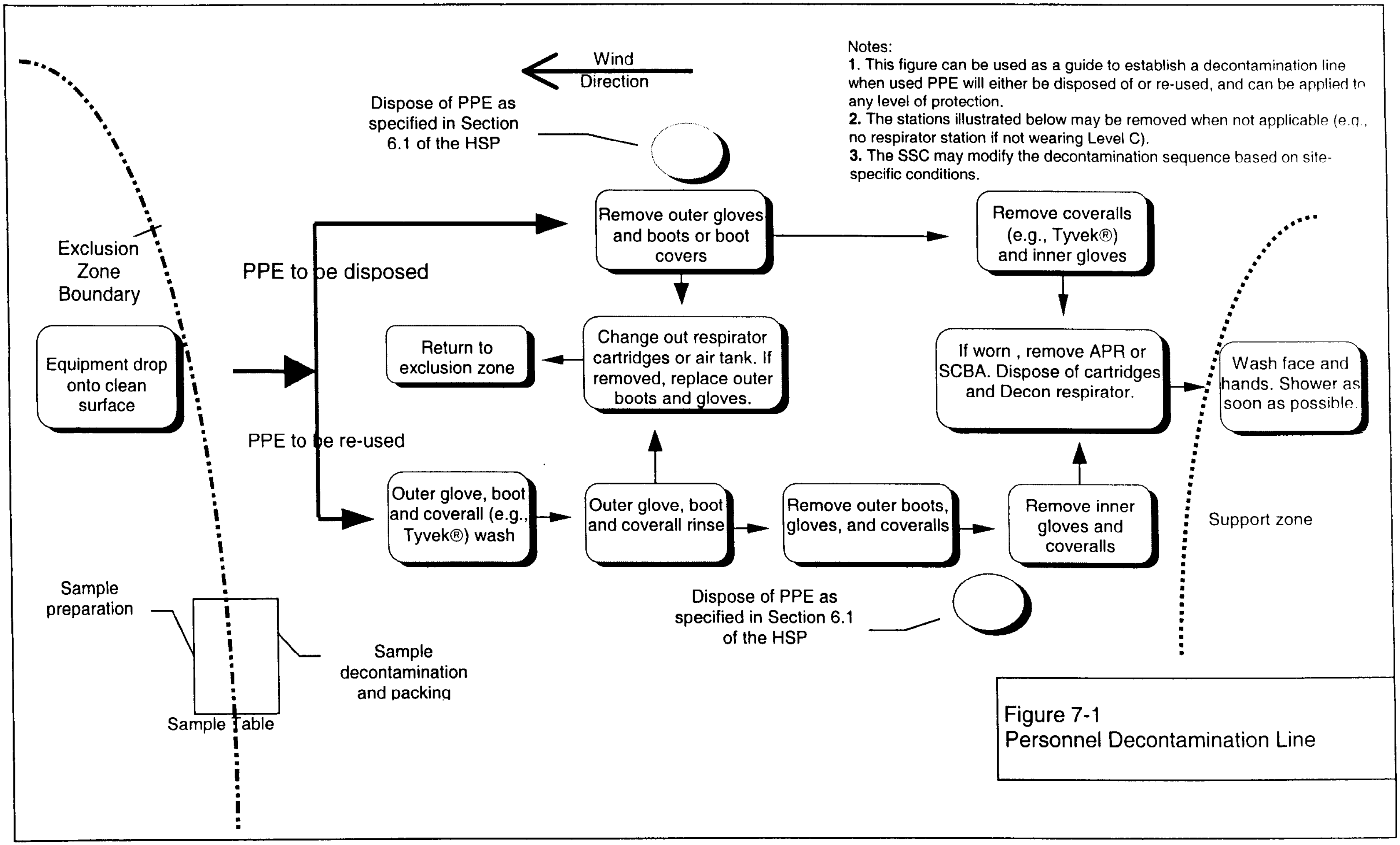


Figure 7-1
Personnel Decontamination Line

8.0 Spill Prevention and Control Plan

This Spill Prevention and Control Plan establishes minimum site requirements. Subcontractors are responsible for spill prevention and control related to their operations. Subcontractors written spill prevention and control procedures must be consistent with this plan. Spills must be reported to your supervisor, the site manager, and the Contract Manager.

8.1 Spill Prevention

Fuel and chemical storage areas will be properly protected from onsite and offsite vehicle traffic. Fuel storage tanks must be equipped with secondary containment. Fuel tanks must be inspected daily for signs of leaks. Accumulated water must be inspected for signs of product before discharge.

Incidental chemical products must be properly stored, transferred, and used in a safe manner. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials must be maintained.

8.2 Spill Containment and Control

Spill control materials will be maintained in the support zone and at fuel storage and dispensing locations. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby personnel and notify the work supervisor.
- Assess the spill area to ensure that it is safe to approach.
- Activate site evacuation signal if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- If it can be done safely, stop the source of the spill.
- Establish site control for the spill area.
- Use proper PPE in responding to the spill.
- Contain and control spilled material through the use of sorbent booms, pads, or other materials.

8.3 Spill Cleanup and Removal

Spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated material will be disposed of according to applicable federal, state, and local requirements. Contact the regulatory compliance person for the project or the program for assistance.

9.0 Confined-Space Entry

Reference CH2M HILL SOP HS-17, Confined Space Entry

Confined-space entry requires health and safety procedures, training, and a permit.

When planned activities include confined-space entry, permit-required confined spaces accessible to CCI personnel are to be identified before the task begins. The SHSS will confirm that permit spaces are properly posted or that employees are informed of their locations and informed of their hazards.

When confined space entry is required, the SSHS will maintain a copy of SOP HS-17 onsite.

10.0 Site Control Plan

10.1 Site Control Procedures

The following site control procedures will be implemented for this CTO:

- SHSS will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of health and safety plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- SHSS records attendance at safety briefings in logbook and documents topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location at sites where project field offices, trailers, or equipment storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Determine wind direction.
- Establish work zones: support, decontamination, and exclusion zones. Delineate work zones with flags or cones as appropriate. The support zone (SZ) should be upwind of the site.
- Establish decontamination procedures, including respirator-decontamination procedures, and test the procedures.
- Use access control at the entry and exit from each work zone.
- Store chemicals in appropriate containers.
- Make MSDSs available for onsite chemicals to which employees are exposed.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Establish procedures for disposing of material generated on the site.
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.

- SHSS is to conduct periodic inspections of work practices to determine the effectiveness of this plan -- refer to CH2M HILL SOP 18, *Health and Safety* Checklist. Deficiencies are to be noted, reported to the HSM, and corrected.

10.2 HAZWOPER Compliance Plan

Reference CH2M HILL SOP HS-17, Health and Safety Plans

The following procedures are to be followed when certain activities do not require 24- or 40-hour training. Note that prior approval from the HSM is required before these tasks are conducted on regulated hazardous waste sites.

- Certain parts of the site work may be covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated tasks must be included in Section 2.2.1.
- Air sampling must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are allowed on the site. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to Sections 3.8 and 6.2 for contaminant data and air sampling requirements, respectively.
- Non-HAZWOPER-trained personnel must be informed of the nature of the existing contamination and its locations, the limits of their access, and the emergency action plan for the site. Non-HAZWOPER-trained personnel also must be trained in accordance with other state and federal OSHA requirements, including 29 CFR 1910.1200 (HAZCOM). Refer to Section 3.7.1 for hazard communication requirements.
- Air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to volatile contaminants. Non-HAZWOPER-trained personnel should be monitored whenever the belief is that there may be a possibility of exposure (e.g., change in site conditions), or at some reasonable frequency to confirm that there is no exposure. Refer to Section 6.1 for air monitoring requirements.

If HAZWOPER-regulated tasks are conducted concurrently with nonregulated tasks, non-HAZWOPER-trained subcontractors must be removed from areas of exposure. If non-HAZWOPER-trained personnel remain on the site while a HAZWOPER-regulated task is conducted, the contaminant/exposure area (exclusion zone) must be posted, non-HAZWOPER-trained personnel must be reminded of the locations of restricted areas and the limits of their access, and real-time monitoring must be conducted. Non-HAZWOPER-trained personnel at risk of exposure must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

11.0 Emergency Response Plan

Reference CH2M HILL SOP HS-12, Emergency Response

11.1 Pre-Emergency Planning

SHSS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with the facility and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Locate the nearest telephone; determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Identify and communicate chemical, safety, radiological, and biological hazards.
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Post site map marked with locations of emergency equipment and supplies, and post OSHA job-site poster. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Evaluate capabilities of local response teams where applicable.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases.
- Review notification procedures for contacting CCI's medical consultant and team member's occupational physician.
- Rehearse the emergency response plan once before site activities begin, including driving the route to the hospital.

- Brief new workers on the emergency response plan.
- The SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

11.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and should post the map. Emergency equipment and its location are listed in Table 11-1.

TABLE 11-1
Emergency Equipment

Emergency Equipment and Supplies	Location
20 lb (or two 10-lb) fire extinguisher (A, B, and C classes)	In Field Vehicle
First aid kit	In Field Vehicle
Eye wash	In Field Vehicle
Potable water	In Field Vehicle
Bloodborne-pathogen kit	In Field Vehicle
Additional equipment (specify)	

11.3 Emergency Medical Treatment

Emergency medical treatment procedures are as follows:

- Notify appropriate emergency response authorities listed in Sections 11.9 and 11.11 (e.g., 911).
- During a time of no emergency, contact CCI's medical consultant for advice and guidance on medical treatment.
- The SHSS will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Notify the field team leader and the project manager of the injury.
- Make certain that the injured person is accompanied to the emergency room.
- Notify the health and safety manager.
- Notify the injured person's human resources department within 24 hours.

- Prepare an incident report -- refer to CH2M HILL SOP 12, *Emergency Response and First Aid*. Submit the report to the corporate director of health and safety and the corporate human resources department within 48 hours.
- When contacting the medical consultant, state that you are calling about a CCI matter, and give your name, your telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.

11.4 Non-emergency Procedures

The procedures listed above may be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CCI medical consultant.

When contacting the medical consultant, state that the situation is a CCI matter, and give your name, your telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken. Follow these procedures as appropriate.

11.5 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Notify appropriate response personnel.
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

11.6 Evacuation

Evacuation procedures are as follows:

- Evacuation routes will be designated by the SHSS before work begins.
- Onsite and offsite assembly points will be designated before work begins.
- Personnel will leave the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.
- SHSS and a "buddy" will remain on the site after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- SHSS accounts for all personnel in the onsite assembly zone.

- A person designated by the SHSS before work begins will account for personnel at the offsite assembly area.
- The SHSS will write up the incident as soon as possible after it occurs and will submit a report to the corporate director of health and safety.

11.7 Evacuation Routes and Assembly Points

Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map posted at the site.

11.8 Evacuation Signals

Evacuation signals are listed in Table 11-2.

TABLE 11-2
Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency–help me
Thumbs up	OK; understood
Grasping buddy's wrist	*Leave area now*
Continuous sounding of horn	Emergency; leave site now

11.9 Emergency Response Telephone Numbers

Emergency response telephone numbers are listed in Table 11-3.

TABLE 11-3
Emergency Response Telephone Numbers

Site Address:	**Phone:** **Cellular Phone:**
Police: Base Security	**Phone:** 911 or 673-4256
Fire: Base Fire Department	**Phone:** 911
Ambulance: Base Fire Department	**Phone:** 911
Hospital: Camden Medical Center	**Phone:** 912/576-4200
Address: 2000 Dan Proctor Dr, St. Marys, Georgia	

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should connect the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activate 911.

Route to Hospital: Proceed directly out Kings Bay Road	1.6 miles
Turn LEFT onto Highway 78	0.1 miles
Turn LEFT onto Dan Proctor Drive	0.2 miles

Distance 1.9 miles

The hospital location map is provided in Figure 11-1.

11.10 Government Agencies Involved in Project

Federal Agency and Contact Name: Naval Facilities Engineering Command

Contact the project manager. Generally, the project manager will contact relevant government agencies.

11.11 Emergency Contacts

If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured person. Notification MUST be made within 24 hours of the injury. Emergency contacts are listed in Table 11-4.

TABLE 11-4
Emergency Contacts

CCI Medical Consultant Dr. Peter P Greany WorkCare Inc.,333 S. Anita Drive Orange, CA 92868,800/455-6155 (After-hours calls will be returned within 20 minutes.)	**Occupational Physician (Local)**
CCI Drug-Free Workplace Program Administrator Alicia Sweeney/ATL 770/604-9095	**Site Safety and Health Specialist (SHSS)** TBD
Navy RAC Health and Safety Manager (HSM) Robert Nash/ATL 770/604-9095	**Project Manager** Mike Halil 904/777-4812
Radiation Health Manager (RHM) Dave McCormack/SEA 206/453-5000	**Human Resources Manager** Nancy Orr /DEN 303/771-0925
Client Eva Clements Naval Facilities Engineering Command	**Corporate Human Resources Department** Julie Zimmerman/COR 303/771-0900
Federal Express Dangerous Goods Shipping 800/238-5355 CH2M HILL Emergency Number for Shipping Dangerous Goods 800/255-3924	**Worker's Compensation and Auto Claims** Sterling Administrative Services 800/420-8926 After hours 800/497-4566 Report fatalities & report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

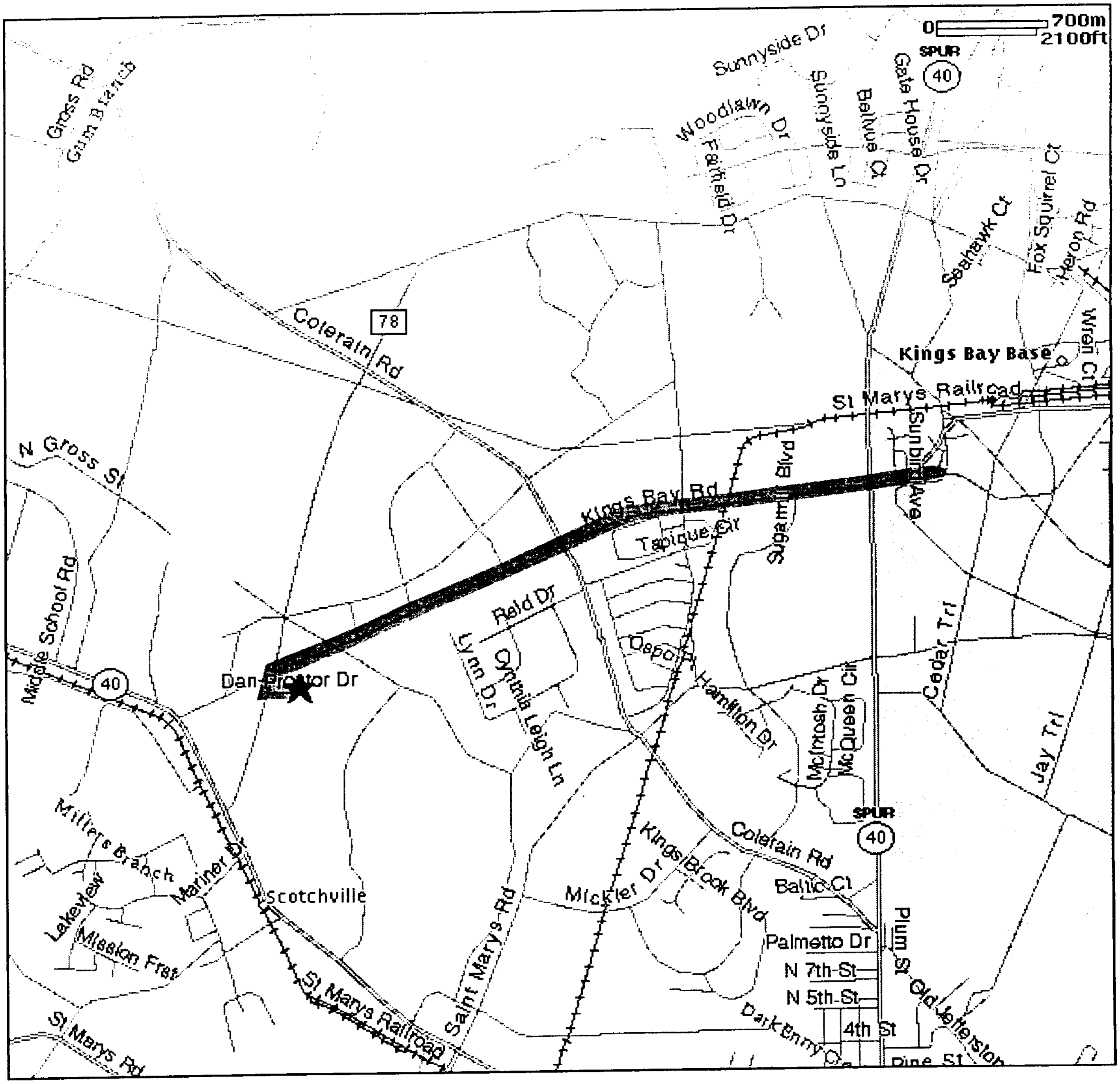


Figure 11-1
Hospital Location Map

CH2MHILL

A092000005ATL\map 101.FH8

Distance 1.9 miles

The hospital location map is provided in Figure 11-1.

11.10 Government Agencies Involved in Project

Federal Agency and Contact Name: Naval Facilities Engineering Command

Contact the project manager. Generally, the project manager will contact relevant government agencies.

11.11 Emergency Contacts

If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured person. Notification MUST be made within 24 hours of the injury. Emergency contacts are listed in Table 11-4.

TABLE 11-4
Emergency Contacts

CCI Medical Consultant Dr. Peter P Greany WorkCare Inc.,333 S. Anita Drive Orange, CA 92868,800/455-6155 (After-hours calls will be returned within 20 minutes.)	**Occupational Physician (Local)**
CCI Drug-Free Workplace Program Administrator Alicia Sweeney/ATL 770/604-9095	**Site Safety and Health Specialist (SHSS)** TBD
Navy RAC Health and Safety Manager (HSM) Angelo Liberatore/ATL 770/604-9095	**Project Manager** Mike Halil 904/777-4812
Radiation Health Manager (RHM) Dave McCormack/SEA 206/453-5000	**Human Resources Manager** Nancy Orr /DEN 303/771-0925
Client Eva Clements Naval Facilities Engineering Command	**Corporate Human Resources Department** Julie Zimmerman/COR 303/771-0900
Federal Express Dangerous Goods Shipping 800/238-5355 CH2M HILL Emergency Number for Shipping Dangerous Goods 800/255-3924	**Worker's Compensation and Auto Claims** Sterling Administrative Services 800/420-8926 After hours 800/497-4566 Report fatalities & report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

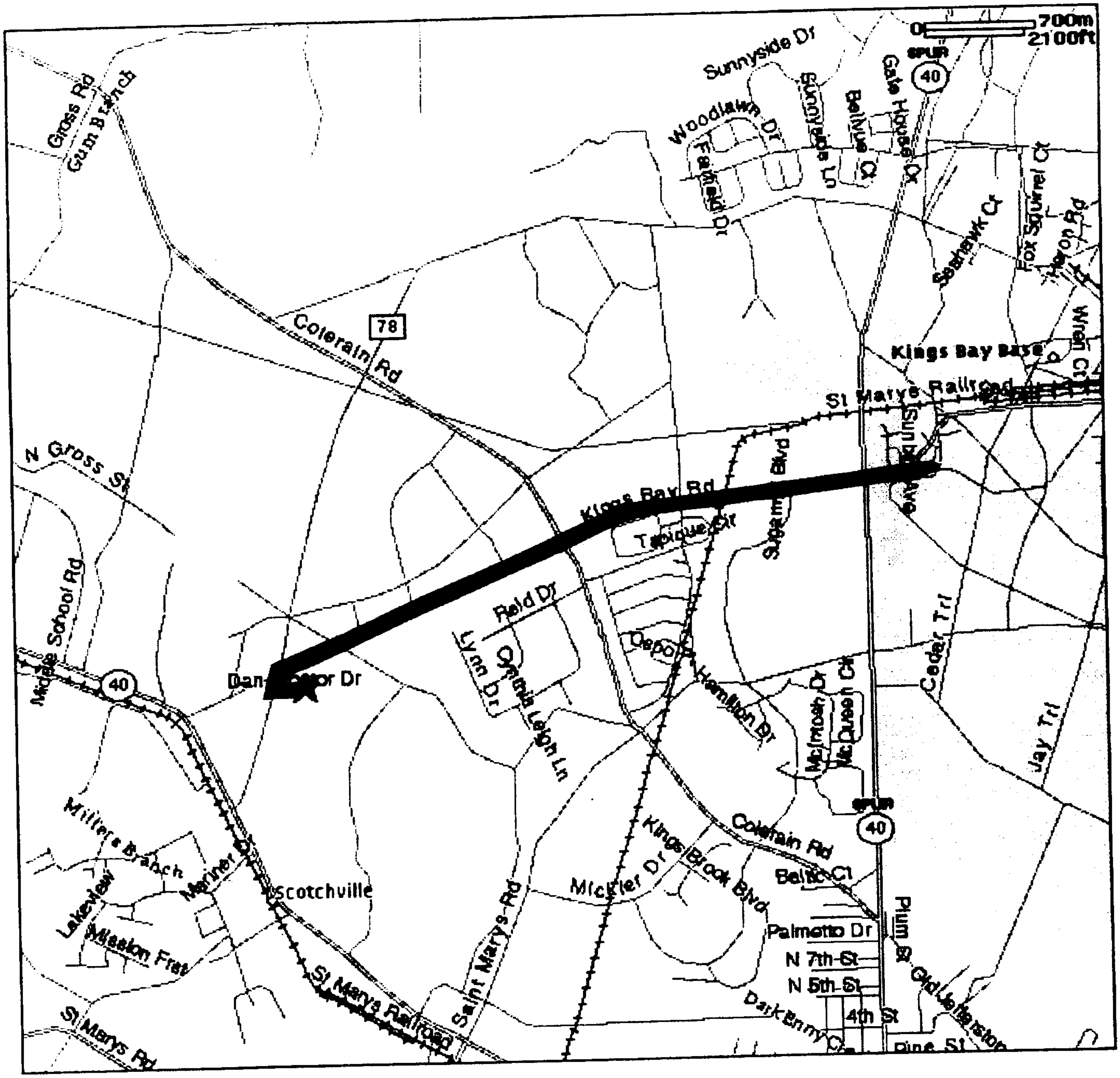


Figure 11-1
Hospital Location Map

12.0 Approval

This site-specific health and safety plan has been written for use by CCI only. CCI claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

12.1 Original Plan

Written by:	Robert Nash	Date:	May 2001
Approved by:	Robert Nash	Date:	May 2001

12.2 Revisions

Revisions Made by:	Richard Rathnow	Date:	August 2001
Revisions Approved by:	Angelo Liberatore	Date:	August 2001

13.0 Distribution

Distribution for this plan is listed in Table 13-1.

TABLE 13-1
Distribution List

Name	Office	Responsibility	Number of Copies
Robert Nash	ATL	Health and Safety Manager/Approver	1
Mike Halil	JAX	Project Manager	1
TBD		Site Superintendent	
Jose Melendez	JAX	Site Safety and Health Specialist	1
Client	NA	Client Project Manager	

Attachment 1

Employee Signoff

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The CCI project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: Naval Sub Base Kings Bay **Project Number:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

Attachment 2

Project Specific Chemical Product Hazard Communication Form

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSC will verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: Naval Sub Base Kings Bay **Project Number:**

MSDSs will be maintained at the following location(s):

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	*Container labels* Identity	Hazard
Hydrogen Peroxide	Tanker or Barrels	Exclusion Zone			
Ferrous Sulfate	Barrels	Exclusion Zone			
Vegetable Oil	Barrels	Exclusion Zone			
Alconox/Liquinox	< 1liter	Support/Decon Zones			

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 3

Chemical-Specific Training Form

CCI CHEMICAL-SPECIFIC TRAINING FORM

Location: Naval Sub Base Kings Bay   Project # :

SSHS: Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC will use the product MSDS to provide the following information concerning each of the products listed above.

- ☐ Physical and health hazards
- ☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- ☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program will be made available for employee review in the facility/project hazard communication file.

Attachment 4

Material Safety Data Sheets

Alconox ®

MATERIAL SAFETY DATA SHEET

Alconox, Inc.
9 East 40th Street, Suite 200
New York, NY 10016

I. IDENTIFICATION

Product Name (as appears on label)	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 1998
Chemical Family:	Anionic Powdered Detergent

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Melting Point:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.

IV. FIRE AND EXPLOSION DATA

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO_2, foam
Special Firefighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. REACTIVITY DATA

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO_2 on burning

VI. HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs readminister fluids. See a physician for discomfort.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VIII. CONTROL MEASURES

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH BUT NO WARRANTY IS EXPRESSED OR IMPLIED.

HACH -- HYDROGEN PEROXIDE SOLUTION 50% H2O2 - HYDROGEN PEROXIDE,REAGENT

MATERIAL SAFETY DATA SHEET
NSN: 6810013534876
Manufacturer's CAGE: 91224
Part No. Indicator: A
Part Number/Trade Name: HYDROGEN PEROXIDE SOLUTION 50% H2O2

===

General Information

===

Item Name: HYDROGEN PEROXIDE,REAGENT
Company's Name: HACH CO.
Company's Street: 5600 LINDBERGH DR
Company's P. O. Box: 608
Company's City: LOVELAND
Company's State: CO
Company's Country: US
Company's Zip Code: 80539-0389
Company's Emerg Ph #: 303-623-5716
Company's Info Ph #: 800-227-4224
Distributor/Vendor # 1: HACH CO. (800-227-4224)
Distributor/Vendor # 1 Cage: 4T252
Record No. For Safety Entry: 003
Tot Safety Entries This Stk#: 003
Status: SE
Date MSDS Prepared: 01JAN95
Safety Data Review Date: 20JUN95
Supply Item Manager: CX
MSDS Serial Number: BNQFV
Specification Number: UNKNOWN
Spec Type, Grade, Class: NONE
Hazard Characteristic Code: D4
Unit Of Issue: CO
Unit Of Issue Container Qty: 490 ML
Type Of Container: CNTNR, PLASTC
Net Unit Weight: 490 ML

===

Ingredients/Identity Information

===

Proprietary: NO
Ingredient: HYDROGEN PEROXIDE (SARA III)
Ingredient Sequence Number: 01
Percent: 50
NIOSH (RTECS) Number: MX0900000
CAS Number: 7722-84-1
OSHA PEL: 1 PPM
ACGIH TLV: 1 PPM; 9394
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: OTHER COMPONENTS (TYPE NOT SPECIFIED)
Ingredient Sequence Number: 02
Percent: <0.1
NIOSH (RTECS) Number: 1003214OC
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED

Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: DEMINERALIZED WATER
Ingredient Sequence Number: 03
Percent: TO 100
NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

===

Physical/Chemical Characteristics

===

Appearance And Odor: CLEAR, COLORLESS, SHARP ODOR, LIQUID.
Boiling Point: 237F,114C
Melting Point: N/D
Vapor Pressure (MM Hg/70 F): 18.3 @30
Vapor Density (Air=1): N/D
Specific Gravity: 1.196
Evaporation Rate And Ref: <1, REF NOT GIVEN
Solubility In Water: VERY SOLUBLE
pH: 1-3
Corrosion Rate (IPY): N/D
Autoignition Temperature: N/A

===

Fire and Explosion Hazard Data

===

Flash Point: NOT APPLICABLE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: USE MEDIA APPROPIRATE TO SURROUNDING FIRE CONDITIONS.
Special Fire Fighting Proc: NONE SPECIFIED BY MANUFACTURER. HOWEVER USE APPROPRIATE PPE/EQUIPMENT AS CONDITIONS WARRANT.
Unusual Fire And Expl Hazrds: SHOCK SENSITIVE.SUSCEPTIBILITY TO SPONT HEATING:MAY OCCUR IN CONTACT W/OXIDIZABLE MATLS.MAY EXPLODE IF CONTAMINATED OR TIGHTLY CLOSED.MATL IS STRONG OXIDIZER.

===

Reactivity Data

===

Cond To Avoid (Stability): EX HEAT;CONTAMIN OF ANY KIND;STORAGE IN TIGHTLY-CLSD CNTNR;CONTACT W/COMBUSTIBLE/ORG/OXIDIZABLE MATLS & CATALYTIC METALS
Materials To Avoid: CONTAMINATION OF ANY KIND;COMBUSTIBLE, ORGANIC, OZIDIZABLE MATLS, CATALYTIC METALS.
Hazardous Decomp Products: CONTAMINATION MAY CAUSE RAPID DECOMPOSITION, OXYGEN RELEASED AND DANGEROUS PRESSURES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

===

Health Hazard Data

===

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: PRODUCT MAY BE CORR TO EYES/SKIN & IRRIT TO

RESP TRACT.ACUTE:MODERATELY TOXIC. CHRONIC:NOT DETERMINED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: PER MSDS:EXPERIMENTAL MUTAGEN.
Signs/Symptoms Of Overexp: CAUSES BURNS; DECOMPOSES IN THE BOWEL BEFORE ABSORPTION YIELDING LARGE VOLUME OF OXYGEN WHICH MAY CAUSE BOWEL TO RUPTURE.
Med Cond Aggravated By Exp: PERSONS W/PRE-EXISTING EYE OR SKIN DISORDERS OR CHRONIC RESPIRATORY DISEASE MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE.
Emergency/First Aid Proc: EYE/SKIN:IMMED FLUSH EYE/SKIN W/WATER FOR 15MINS. REMOVE CONTAMINATED CLOTHING. CALL PHYSICIAN. INGEST:DO NOT INDUCE VOMITING. GIVE 1-2 GLASSES OF WATER. CALL PHYSICIAN IMMED. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHAL:REMOVE TO FRESH AIR.

==

Precautions for Safe Handling and Use

==

Steps If Matl Released/Spill: IN SMALL BATCHES DILUTE W/EXCESS WATER IN BEAKER. NEUTRALIZE TO PH BETWEEN 6 AND 9 W/SODA ASH. FLUSH TO DRAIN WITH EXCESS WATER.
Neutralizing Agent: SODA ASH
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: STORE IN COOL, VENTILATED AREA IN VENTED CONTAINER. AVOID CONGACT W/EYES/SKIN/CLOTHING. DO NOT BREATHE MIST/VAPOR. KEEP AWAY FROM OXIDIZABLE MATLS.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

==

Control Measures

==

Respiratory Protection: NONE SPECIFIED BY MANUFACTURER.
Ventilation: FUME HOODS.
Protective Gloves: DISPOSABLE LATEX GLOVES
Eye Protection: LAB GRADE GOGGLES
Other Protective Equipment: LAB COAT.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: NONE

==

Transportation Data

==

Trans Data Review Date: 95171
DOT PSN Code: HMG
DOT Proper Shipping Name: HYDROGEN PEROXIDE, AQUEOUS SOLUTIONS
DOT Class: 5.1
DOT ID Number: UN2014
DOT Pack Group: II
DOT Label: OXIDIZER, CORROSIVE
IMO PSN Code: IIL
IMO Proper Shipping Name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION,
IMO Regulations Page Number: 5151
IMO UN Number: 2014
IMO UN Class: 5.1
IMO Subsidiary Risk Label: CORROSIVE
IATA PSN Code: NUG
IATA UN ID Number: 2014
IATA UN Class: 5.1

IATA Subsidiary Risk Class: 8
AFI PSN Code: NUG
AFI Basic Pac Ref: NOT ACCEPTED
5.1, SUBSIDIARY RISK:8.

===

Disposal Data

===

===

Label Data

===

Label Required: YES
Technical Review Date: 20JUN95
MFR Label Number: NONE
Label Status: F
Common Name: HYDROGEN PEROXIDE SOLUTION 50% H_2O_2
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: MATL OXIDIZER & CORROSIVE. PRODUCT MAY BE CORR TO EYES/SKIN & IRRIT TO RESP TRACT.ACUTE:MODERATELY TOXIC. CHRONIC:NOT DETERMINED. STORE IN COOL, VENTILATED AREA IN VENTED CONTAINER. AVOID CONGACT W/EYES/SKIN/CLOTHING. DO NOT BREATHE MIST/VAPOR. KEEP AWAY FROM IMMED FLUSH EYE/SKIN W/WATER FOR 15MINS. REMOVE CONTAMINATED CLOTHING. CALL PHYSICIAN. INGEST:DO NOT INDUCE VOMITING. GIVE 1-2 GLASSES OF WATER. CALL PHYSICIAN IMMED. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHAL:REMOVE TO FRESH AIR.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: HACH CO.
Label Street: 5600 LINDBERGH DR
Label P.O. Box: 608
Label City: LOVELAND
Label State: CO
Label Zip Code: 80539-0389
Label Country: US
Label Emergency Number: 303-623-5716
Year Procured: 1995

J T BAKER -- FERROUS SULFATE, C342K20

MATERIAL SAFETY DATA SHEET
NSN: 681000N073541
Manufacturer's CAGE: 70829
Part No. Indicator: A
Part Number/Trade Name: FERROUS SULFATE, C342K20

===

General Information

===

Company's Name: J T BAKER INC
Company's Street: 222 RED SCHOOL LANE
Company's City: PHILLIPSBURG
Company's State: NJ
Company's Country: US
Company's Zip Code: 08865
Company's Emerg Ph #: 908-859-2151
Company's Info Ph #: 908-859-2151
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 15DEC95
Safety Data Review Date: 02OCT96
MSDS Serial Number: CCNVS
Hazard Characteristic Code: NK

===

Ingredients/Identity Information

===

Proprietary: NO
Ingredient: IRON (II SULFATE (1:1); (FERROUS SULFATE) (CERCLA)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: NO8500000
CAS Number: 7720-78-7
OSHA PEL: 1 MG (FE)/M3
ACGIH TLV: 1 MG (FE)/M3

Proprietary: NO
Ingredient: RESP PROT:APPRVD AIR-PURIFYING RESPS DO NOT PROTECT WORKERS IN OXYG-DEFICIENT ATMOSPHERES.
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: VENT:GENERALLY PREFERRED BECAUSE IT CAN CONTROL EMISSIONS OF CONTAMINANT AT ITS SOURCE, PREVENTING DISPERSION OF (ING 4)
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 3:IT INTO GENERAL WORK AREA. PLEASE REFER TO ACGIH DOCUMENT, "INDUST VENT, A MANUAL OF REC PRACTICES", MOST (ING 5)
Ingredient Sequence Number: 04

NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 4:RECENT EDITION, FOR DETAILS.
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: BLUE-GREEN FINE CRYSTALS, ODORLESS.
Boiling Point: SUPDAT
Melting Point: SUPDAT
Specific Gravity: 1.00
Evaporation Rate And Ref: NOT KNOWN
Solubility In Water: SUPP DATA

Fire and Explosion Hazard Data

Extinguishing Media: USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.
Special Fire Fighting Proc: USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NOT CONSIDERED TO BE A FIRE OR EXPLOSION HAZARD.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE.
Materials To Avoid: ALKALIES, SOLUBLE CARBONATES, & OXIDIZING MATLS. REACTS IN MOIST AIR TO FORM FERRIC SULFATE.
Hazardous Decomp Products: WHEN HEATED TO DECOMPOSITION IT EMITS TOXIC FUMES OF SULFUR OXIDES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORAL,MOUSE) 1520 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE:INHALATION:EXCESSIVE INHALATION OF DUST MAY BE IRRITATING TO RESPIRATORY TRACT. INGESTION:LOW TOXICITY IN SMALL QUANTITIES BUT LARGER DOSAGES MAY CAUSE NAUSEA, VOMITING, DIARRHEA, & BLACK STOOL. PINK URINE DISCOLORATION IS STRONG INDICATOR OF IRON POISONING. LIVER DAMAGE, COMA, & DEATH FROM (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: HLTH HAZ:IRON POISONING HAS BEEN RECORDED.

SMALLER DOSES ARE MUCH MORE TOX TO CHILDREN. SKIN:MAY CAUSE MILD IRRITATION. EYE:CONT MAY CAUSE IRRITATION, REDNESS, & PAIN. CHRONIC:SEVERE/ CHRONIC FERROUS SULFATE POISONINGS MAY DAMAGE BLOOD VESSELS. LARGE CHRONIC DOSE CAUSE RICKETTS IN INFANTS.
Med Cond Aggravated By Exp: PERSONS WITH PRE-EXISTING SKIN DISORDERS OR EYE PROBLEMS, OR IMPAIRED LIVER, KIDNEY OR RESPIRATORY FUNCTION MAY BE MORE SUSECEPTIBLE TO THE EFFECTS OF THE SUBSTANCE.
Emergency/First Aid Proc: INHAL:REMOVE TO FRESH AIR. GET MED ATTN FOR ANY BRTHG DFCLTY. INGEST:INDUCE VOMIT IMMED AS DIRECTED BY MED PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO UNCON PERSON. SKIN:WASH EXPOSED AREA W/SOAP & WATER. GET MED ADVICE IF IRRIT DEVELOPS. EYE:IMMED FLUSH W/PLENTY OF WATER FOR @ LST 15 MINS. CALL PHYS.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: VENTILATE AREA OF LEAK/SPILL. WEAR APPROP PERSONAL PROT EQUIP AS SPECIFIED IN CONTROL & PROT MEASURES SECTION. PICK UP & PLACE IN SUITABLE CNTNR FOR RECLAMATION/DISP, USING METH THAT DOES NOT GENERATE DUST. WHATEVER CANNOT BE SAVED FOR (SUPDAT)
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS.
Precautions-Handling/Storing: KEEP IN TIGHTLY CLSD CNTNR, STORED IN COOL, DRY, VENTILATED AREA. PROJECT AGAINST PHYSICAL DMG. ISOLATE FROM INCOMPAT SUBSTANCES.
Other Precautions: CNTNRS OF THIS MATL MAY BE HAZ WHEN EMPTY SINCE THEY RETAIN PROD RESIDUES (DUST, SOLIDS); OBSERVE ALL WARNINGS & PRECS LISTED FOR PROD. WARNING!MAY BE HARMFUL IF SWALLOWED. MAY CAUSE EYE IRRIT. AVOID CONT W/EYES.

Control Measures

Respiratory Protection: IF EXPOS LIM IS EXCEEDED, NIOSH APPRVD DUST/MIST RESP MAY BE WORN FOR UP TO 10 TIMES EXPOS LIM. FOR EMER OR INSTANCES WHERE EXPOS LEVS ARE NOT KNOWN, USE NIOSH APPRVD POSITIVE-PRESS, AIR-SUPPLIED RESP. WARNING:NIOSH (ING 2)
Ventilation: SYS OF LOC &/OR GEN EXHAUST IS REC TO KEEP EMPLOYEE EXPOS BELOW AIRBORNE EXPOS LIMS. LOC EXHAUST VENT IS (ING 3)
Protective Gloves: IMPERVIOUS GLOVES (FP N).
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).
Other Protective Equipment: CLEAN BODY-COVERING CLOTHING. ANSI APPRVD EYE WASH & DELUGE SHOWER (FP N).
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: BP:DECOMPOSES AT >572F,>300C. MP:LOSES WATER @ 65C(149F). SOL IN H*2O:48.6 G/100 G WATER @ 50C (122F). SPILL RELEASE PROC:RECOVERY/RECYCLING SHOULD BE MANAGED IN APPROP & APPRVD WASTE DISP FACILITY. PROCESSING, USE/CONTAM OF PROD MAY CHANGE WASTE MANAGEMENT OPTIONS, STATE & LOC DISP REGS MAY DIFFER FROM FED DISP REGS.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 02OCT96
Label Date: 02OCT96
Label Status: G
Common Name: FERROUS SULFATE, C342K20
Chronic Hazard: YES
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: DO NOT INGEST. ACUTE:INHALATION:EXCESSIVE INHALATION OF DUST MAY BE IRRITATING TO RESPIRATORY TRACT. INGESTION:LOW TOXICITY IN SMALL QUANTITIES BUT LARGER DOSAGES MAY CAUSE NAUSEA, VOMITING, DIARRHEA, & BLACK STOOL. PINK URINE DISCOLORATION IS STRONG INDICATOR OF IRON POISONING. LIVER DAMAGE, COMA, & DEATH FROM IRON POISONING HAS BEEN RECORDED. SMALLER DOSES ARE MUCH MORE TOXIC TO CHILDREN. SKIN:MAY CAUSE MILD IRRITATION. EYE:CONTACT MAY CAUSE IRRITATION, REDNESS, AND PAIN. CHRONIC:SEVERE OR CHRONIC FERROUS SULFATE POISONINGS MAY DAMAGE BLOOD VESSLES. LARGE CHRONIC DOSE CAUSES RICKETTS IN INFANTS.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: J T BAKER INC
Label Street: 222 RED SCHOOL LANE
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865
Label Country: US
Label Emergency Number: 908-859-2151

ROSS & ROWE DIV OF ADM -- LECITHIN - VEGETABLE OIL

MATERIAL SAFETY DATA SHEET
NSN: 650500N040499
Manufacturer's CAGE: 84168
Part No. Indicator: A
Part Number/Trade Name: LECITHIN

==

General Information

==

Item Name: VEGETABLE OIL
Company's Name: ROSS & ROWE DIV OF ADM
Company's P. O. Box: 1470
Company's City: DECATUR
Company's State: IL
Company's Country: US
Company's Zip Code: 62526
Company's Emerg Ph #: 217-424-7404
Company's Info Ph #: 217-424-5898
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01AUG88
Safety Data Review Date: 07APR93
MSDS Serial Number: BSFCC
Hazard Characteristic Code: NK

==

Ingredients/Identity Information

==

Proprietary: NO
Ingredient: NON HAZARDOUS INGREDIENTS
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1000314NH
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

==

Physical/Chemical Characteristics

==

Appearance And Odor: CLEAR TO YELLOW BROWN FLUID; BLAND ODOR.
Boiling Point: N/A
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Specific Gravity: 1.05 (H*2O=1)
Evaporation Rate And Ref: NIL
Solubility In Water: INSOLUBLE

==

Fire and Explosion Hazard Data

==

Flash Point: MELTS, CHARS
Extinguishing Media: DRY CHEMICAL, CARBON DIOXIDE.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NONE

==

Reactivity Data

==

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomp Products: IF IGNITION OCCURS, COULD YIELD CARBON MONOXIDE & DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

==

Health Hazard Data

==

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: NOT APPLICABLE
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: NOT APPLICABLE
Med Cond Aggravated By Exp: NOT APPLICABLE
Emergency/First Aid Proc: INGEST:CALL MD IMMEDIATELY (FP N). INHAL: REMOVE IMMEDIATELY FLUSH W/POTABLE WATER FOR A MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM MD (FP N). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N).

==

Precautions for Safe Handling and Use

==

Steps If Matl Released/Spill: PHYSICALLY CLEAN SPILL AREA, DISPOSE OF MATERIAL, USE ABSORBENTS IF REQUIRED.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: TO APPROVED LANDFILL. FOLLOW FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP PRODUCT DRY & COOL TO MAINTAIN QUALITY.
Other Precautions: DO NOT SPILL, BECOMES SLIPPERY.

==

Control Measures

==

Respiratory Protection: USE NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation: NOT APPLICABLE
Protective Gloves: IMPERVIOUS GLOVES (FP N).
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).
Other Protective Equipment: NOT APPLICABLE
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

==

Transportation Data

==

==

Disposal Data

==

==

Label Data

==

Label Required: YES
Technical Review Date: 07APR93

Label Date: 22MAR93
Label Status: G
Common Name: LECITHIN
Chronic Hazard: NO
Signal Word: NONE
Acute Health Hazard-None: X
Contact Hazard-None: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: KEEP PRODUCT DRY & COOL TO MAINTAIN QUALITY. ACUTE:NONE LISTED BY MANUFACTURER. CHRONIC:NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ROSS & ROWE DIV OF ADM
Label P.O. Box: 1470
Label City: DECATUR
Label State: IL
Label Zip Code: 62526
Label Country: US
Label Emergency Number: 217-424-7404

Attachment 5

Self Assessment Checklist

CH2MHILL ***JOBSITE SAFETY INSPECTION CHECKLIST*** Revision.: 03

STANDARD OF PRACTICE HS-18 - HEALTH AND SAFETY CHECKLIST Date: 05/01/98

Note: The following jobsite safety inspection checklist is to be used only at locations where CCI controls the work. It is not to be used at locations where others control the work.

Project Name: Naval Sub Base Kings Bay Project No.:

Location: Kings Bay Georgia Project Manager: Mike Halil

Inspector: Date:

This checklist has been divided into two sections. The first section (I through XXVI) are applicable to all projects. The second section (XXVII through XXIX) addresses specific situations such as hazardous waste, construction activities, and office trailers. There may be some duplication between the first and second sections.

If an item is not applicable, the column titled "N/A" should be checked. If an item is applicable but the auditor does not observe it during the inspection, the "N/O" column should be checked. For each deficiency noted, a Health and Safety Audit Finding Form must be completed. The Corporate Health and Safety Director must be copied on the results of all audits.

Check "Yes" for Items Completed	Yes	No	N/A	N/O
I. JOBSITE OFFICE				
1. Posters and safety signs in place:				
a. OSHA safety poster	☐	☐	☐	☐
b. Emergency Telephone Number Form	☐	☐	☐	☐
c. Workers Compensation Form	☐	☐	☐	☐
2. First aid kit:				
a. Fully stocked/sufficient supply	☐	☐	☐	☐
b. First-aid administered by a person with a valid certificate	☐	☐	☐	☐
3. Bloodborne-pathogen kit	☐	☐	☐	☐
4. Accident/injury reporting:				
a. Employees briefed	☐	☐	☐	☐
b. Forms available	☐	☐	☐	☐
c. Injuries and illnesses reported and logged	☐	☐	☐	☐
d. Accidents investigated and properly followed up to prevent	☐	☐	☐	☐
e. Accident reports and logs submitted promptly as required	☐	☐	☐	☐

5. Job safety rules and regulations available/posted

II. HAZARD COMMUNICATION

1. Employee training:
   a. Employees' signed training certificates on file
2. Material safety data sheets (MSDSs):
   a. MSDSs on file
   b. Log assigned to competent person
   c. Log complete and up to date
3. Written program on file

III. EMPLOYEE TRAINING

1. Safety indoctrination held for new employees
2. Sufficient instruction given in recognition and avoidance of job hazards; unsafe conditions; and job rules, regulations, and procedures
3. Sufficient instruction in proper use and maintenance of tools, equipment, and personal protective equipment
4. Employees instructed to report unsafe or hazardous conditions to proper job supervisor
5. Employees instructed to promptly report injury, illness, and accidents involving damage to equipment and materials
6. All site personnel have read the job safety rules and regulations and have signed the "Employee Signoff Sheet"

IV. JOBSITE LOGISTICS AND LAYOUT

1. Traffic routes around construction areas:
   a. Warning signs, flagging in place
2. Trucks and heavy equipment:
   a. Good mechanical conditions
   b. Backup signals working
   c. Seat belts installed and used

V. PUBLIC PROTECTION

1. Warning signs in place around site
2. Hazard lights

VI. HOUSEKEEPING

1. Material storage yard:
   a. Stacked neatly and properly
   b. Aisles, walkways, roads clear
2. Check work areas for:
   a. Loose and waste materials

b. Vicinity of ladders, stairs, ramps, and machinery ☐ ☐ ☐ ☐

c. Empty bottles, containers, papers, trash, bands, brick-bats, etc. ☐ ☐ ☐ ☐

d. Trash cans, dumpsters available and emptied regularly ☐ ☐ ☐ ☐

VII. PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Hard hats ☐ ☐ ☐ ☐
2. Safety shoes/boots ☐ ☐ ☐ ☐
3. Eye/face protection ☐ ☐ ☐ ☐
4. Safety belts/lanyards ☐ ☐ ☐ ☐
5. Ear protection:
   a. Noise level areas of 90 dBA and above identified ☐ ☐ ☐ ☐
   b. Signs notifying personnel of "Hearing Protection Required" posted ☐ ☐ ☐ ☐
6. Specialized equipment:
   a. Gloves ☐ ☐ ☐ ☐
   b. Chemical-resistant clothing ☐ ☐ ☐ ☐
7. Tools:
   a. Handles in good shape ☐ ☐ ☐ ☐
   b Tool guards in place ☐ ☐ ☐ ☐

VIII. SANITATION

1. Temporary toilets:
   a. Serviced regularly ☐ ☐ ☐ ☐
   b. Sufficient Quantity (20 or fewer employees - 1 required; 20 or more employees - 1 toilet and 1 urinal per 40 workers ☐ ☐ ☐ ☐
2. Potable Water:
   a. Tightly closed containers ☐ ☐ ☐ ☐
   b. Equipped with tap ☐ ☐ ☐ ☐
   c. Paper cups available ☐ ☐ ☐ ☐
   d. Containers labeled "Drinking Water" ☐ ☐ ☐ ☐

IX. FLOOR AND WALL OPENINGS GUARDS

XI. SCAFFOLDING

XII. ELECTRICAL

1. Cords/devices have current inspection color code tape installed ☐ ☐ ☐ ☐
2. Frayed cords, broken plugs fixed ☐ ☐ ☐ ☐

3. Temporary wiring:				
a. Panels secured and GFCIs working	☐	☐	☐	☐
b. Away from vehicle pathways	☐	☐	☐	☐
c. Out of water/moisture	☐	☐	☐	☐
d. No broken receptacles found	☐	☐	☐	☐
e. Sufficient outlets for all crafts	☐	☐	☐	☐
4. Temporary lighting with cages	☐	☐	☐	☐
5. Assured equipment grounding conductor program in place, if not using GFCIs	☐	☐	☐	☐
6. Lock-out or tag-out system used when necessary	☐	☐	☐	☐
7. Electrical dangers posted and guarded	☐	☐	☐	☐
8. Fire hazards checked, proper extinguishers available	☐	☐	☐	☐
9. Only qualified electricians work on electrical circuits and equipment	☐	☐	☐	☐
10. Cords passing through work areas must be covered or elevated to protect them from damage	☐	☐	☐	☐
11. Extension cords must be hard or extra-hard usage	☐	☐	☐	☐

XIII. TEMPORARY HEATERS

XIV. FIRE PROTECTION

1. Office fire extinguisher in working order and inspected regularly	☐	☐	☐	☐
2. One extinguisher, 2A rating, for each 3,000 square feet of protected area	☐	☐	☐	☐
3. One extinguisher, 2A rating, on each floor adjacent to each stairway	☐	☐	☐	☐
4. Trash, paper, other combustibles picked up	☐	☐	☐	☐
5. Welders/roofers have extinguishers nearby and a fire watch is available if needed	☐	☐	☐	☐
6. Fire alarm available/fire evacuation plan	☐	☐	☐	☐
7. "No Smoking" signs posted and enforced where necessary	☐	☐	☐	☐
8. Supervisors and employees trained in proper use of extinguishers	☐	☐	☐	☐

XV. MATERIAL STORAGE AND HANDLING

1. Neat storage area, clear passageways	☐	☐	☐	☐

2. Materials spotted to minimize rehandling and reduce transport distances ☐ ☐ ☐ ☐
3. Power equipment used to handle heavy/awkward loads ☐ ☐ ☐ ☐
4. Stacks on firm footing and all tier stacked materials secured against sudden movement ☐ ☐ ☐ ☐
5. Storage platforms, skids, bins, shelves, etc. in good repair ☐ ☐ ☐ ☐
6. Protruding nails and wires removed and rugged metal edges protected before material is handled ☐ ☐ ☐ ☐
7. Lifting weights known before handling ☐ ☐ ☐ ☐
8. Employees using proper lifting methods, picking up loads correctly ☐ ☐ ☐ ☐
9. Proper number of employees for each operation, physically suited for task ☐ ☐ ☐ ☐

XVI. DEMOLITION WORK

XVII.STEEL ERECTION

1. Safety nets used, if required ☐ ☐ ☐ ☐
2. Hard hats, eye protection, safety belts, serviceable shoes, gloves, and full clothing used ☐ ☐ ☐ ☐
3. Tag lines used for hoisting tools and material ☐ ☐ ☐ ☐
4. Fire hazards checked at rivet force and welding operations ☐ ☐ ☐ ☐
5. Ladders, stairs, or other safe access provided ☐ ☐ ☐ ☐
6. Hoisting apparatus checked ☐ ☐ ☐ ☐
7. Good housekeeping, welding, and rigging practices observed ☐ ☐ ☐ ☐

XX. FLAMMABLE AND COMBUSTIBLE LIQUIDS

1. All containers clearly marked to show contents (gas cylinders, cans, drums, fuel tanks, etc.) ☐ ☐ ☐ ☐
2. Proper storage practices observed:
   a. Storage areas enclosed or protected from heat and mobile equipment exposure ☐ ☐ ☐ ☐
   b. Fire hazards checked ☐ ☐ ☐ ☐
   c. Sufficient fire extinguishers ☐ ☐ ☐ ☐
   d. UL approved safety cans for 1 to 5 gallons of flammable liquids ☐ ☐ ☐ ☐

e. Approved cabinet for indoor storage of liquids in excess of 25-gallons, but not more than 120-gallon storage	☐	☐	☐	☐
f. Sign labeled "Flammable - Keep Fire Away" posted on cabinet	☐	☐	☐	☐

XXI. FLAMMABLE GAS (Oxygen/Acetylene)

XXII. WELDING OPERATIONS

XXIII. HOISTS

1. Material hoists:				
a. Designed by licensed professional engineer	☐	☐	☐	☐
b. With tower enclosed for full height on all sides with 1/2-inch by 18--inch Gauge screen mesh, except for landing for landing access	☐	☐	☐	☐
c. With tower not enclosed, hoist platform or car will be totally enclosed on all sides for the full height between floor and overhead covering with 1/2-inch x 14-inch gauge mesh	☐	☐	☐	☐
d. Operation rules poster "No Riders Allowed" posted	☐	☐	☐	☐
e. Hoisting entrances guarded by substantial gate or bars	☐	☐	☐	☐
f. Vertical gates of sufficient height to prevent anyone from looking over them into shaft	☐	☐	☐	☐
g. Competent person assigned to inspect daily	☐	☐	☐	☐
h. Weekly inspections logged	☐	☐	☐	☐
I. Annual inspection available	☐	☐	☐	☐
j. Fire extinguisher in place and inspected	☐	☐	☐	☐
k. Load chart posted	☐	☐	☐	☐

XXIV. BLASTING

XXV. HAZARDOUS WASTE

<u>Certification and Training of CH2M HILL Personnel</u>

1. Medical exam within last 12 months	☐	☐	☐	☐
2. 40-hour initial training, 3 days supervised field activities, 8-hour annual Refresher	☐	☐	☐	☐
3. First aid and CPR certification	☐	☐	☐	☐
4. Attend pre-entry safety meeting	☐	☐	☐	☐
5. Site Safety Coordinator with appropriate training	☐	☐	☐	☐

<u>Certification and Training of Subcontractor Personnel</u>

1. Medical exam within last 12 months	☐	☐	☐	☐

2. 40-hour initial training, 3 days supervised field activities, 8-hour Annual refresher

3. First aid and CPR certification

4. Attend pre-entry safety meeting

<u>**Site Safety Documentation**</u>

1. Site health and safety plan (HSP) prepared and approved

2. HSP onsite

3. All personnel onsite identified in HSP

4. Documentation of safety briefing

5. Hospital map posted

6. Phone numbers posted

7. Emergency vehicle identified

8. Material Safety Data Sheets (MSDSs) onsite

9. Work zones delineated
(How? ____)

10. Wind direction flags in use

11. Documentation of calibration of monitoring equipment in Clean environment

12. Monitoring conducted and recorded as specified in HSP
(Frequency? ____)

13. Monitoring for heat/cold stress

14. Buddy system in use

15. Decontamination procedures established as specified in HSP

16. No eating, drinking, or smoking in exclusion and contamination Reduction zones

17. Toilet facilities provided

18. No contact lenses

19. Work conducted during daylight hours only

Safety Briefing

1. All personnel attended (including new personnel) ☐ ☐ ☐ ☐
2. Documentation of meetings ☐ ☐ ☐ ☐
3. Chemical hazards and toxicology reviewed ☐ ☐ ☐ ☐
4. Physical hazards reviewed ☐ ☐ ☐ ☐
5. Biological hazards reviewed ☐ ☐ ☐ ☐
6. Heat/cold stress information reviewed ☐ ☐ ☐ ☐
7. Air monitoring requirements ☐ ☐ ☐ ☐
8. Levels of protection reviewed ☐ ☐ ☐ ☐
9. Work zones reviewed ☐ ☐ ☐ ☐
10. Decontamination procedures reviewed ☐ ☐ ☐ ☐
11. Emergency response procedures reviewed ☐ ☐ ☐ ☐
12. Site communications ☐ ☐ ☐ ☐

Personal Protective Equipment (PPE)

1. Levels of protection being worn as specified in HSP ☐ ☐ ☐ ☐
2. All appropriate PPE available onsite ☐ ☐ ☐ ☐
3. Hard hats being worn ☐ ☐ ☐ ☐
4. Appropriate hand protection being used ☐ ☐ ☐ ☐
   (What? ____)
5. Appropriate body protection being used ☐ ☐ ☐ ☐
   (What? ____)
6. Appropriate eye protection being used ☐ ☐ ☐ ☐
   (What? ____)
7. Appropriate ear protection being used ☐ ☐ ☐ ☐
8. Appropriate respirator protection being used ☐ ☐ ☐ ☐

9. Respirators donned correctly ☐ ☐ ☐ ☐

10. TLD badges being used ☐ ☐ ☐ ☐

11. If air purifying respirators (APRs) are being used, correct cartridges ☐ ☐ ☐ ☐
(Type? ______________________________)

12. If self contained breathing apparatuses (SCBAs) are being used, is grade D air being used ☐ ☐ ☐ ☐

13. If SCBAs are being used, are cylinders stored correctly ☐ ☐ ☐ ☐

14. If PPE is not onsite, prepared to halt work ☐ ☐ ☐ ☐

15. Disposal methods in place for disposable PPE ☐ ☐ ☐ ☐

Decontamination Procedures

1. Decontamination procedure established as specified in the HSP ☐ ☐ ☐ ☐

2. Decontamination zone clearly defined ☐ ☐ ☐ ☐

3. PPE properly decontaminated ☐ ☐ ☐ ☐
(How? ______________________________)

4. Sampling equipment properly decontaminated ☐ ☐ ☐ ☐
(How? ______________________________)

5. Monitoring equipment properly decontaminated ☐ ☐ ☐ ☐
(How? ______________________________)

6. Heavy equipment properly decontaminated ☐ ☐ ☐ ☐
(How? ______________________________)

7. Samples properly decontaminated ☐ ☐ ☐ ☐
(How? ______________________________)

8. Decontamination fluids appropriately disposed of ☐ ☐ ☐ ☐

XXVI. CONSTRUCTION INSPECTIONS

XXVII. OFFICE TRAILERS/BUILDINGS

Employer Posting

1. Is the OSHA (or state) job safety poster displayed in a prominent location where all employees are likely to see it? ☐ ☐ ☐ ☐

2. Are emergency telephone numbers posted where they can be readily found in case of emergency? ☐ ☐ ☐ ☐

3. Where employees may be exposed to any toxic substances or harmful physical agents, has appropriate information concerning employee access to medical and exposure records and Material Safety Data Sheets been posted or otherwise made readily available to affected employees? ☐ ☐ ☐ ☐

4. Are signs concerning exiting from buildings, room capacities, floor loading, exposures to x-ray, microwave, or other harmful radiation or substances posted where appropriate? ☐ ☐ ☐ ☐
5. Are other required posters properly displayed, such as:
   a. Industrial Welfare Commission orders regulating wages, hours, and working conditions? ☐ ☐ ☐ ☐
   b. Discrimination in employment prohibited by law? ☐ ☐ ☐ ☐
   c. Notice to employees of unemployment and disability insurance. ☐ ☐ ☐ ☐
   d. Payday notice? ☐ ☐ ☐ ☐

Fire Protection

1. Is there a current fire prevention plan? ☐ ☐ ☐ ☐
2. Does the plan describe the type of fire protection equipment and/or ☐ ☐ ☐ ☐
3. Are practices and procedures established to control potential fire hazards and ignition sources? ☐ ☐ ☐ ☐
4. Is local fire department well acquainted with facilities, location, and specific hazards? ☐ ☐ ☐ ☐
5. Is there a fire alarm system and is it certified as required? ☐ ☐ ☐ ☐
6. If you have a fire alarm system, is it tested at least annually? ☐ ☐ ☐ ☐
7. Are fire doors and shutters in good operating condition? ☐ ☐ ☐ ☐
8. Are automatic sprinkler system water control valves, air and water pressures checked weekly/periodically as required? ☐ ☐ ☐ ☐
9. Is maintenance of automatic sprinkler systems assigned to responsible persons or to a sprinkler contractor? ☐ ☐ ☐ ☐
10. Is an earthquake preparedness kit on site? ☐ ☐ ☐ ☐

Exiting or Egress

1. Are all exits marked with an exit sign and illuminated by a reliable light source? ☐ ☐ ☐ ☐
2. Are the directions to exits, when not immediately apparent, marked with visible signs? ☐ ☐ ☐ ☐
3. Are doors, passageways, or stairways that are neither exits nor access to exits and which could be mistaken for exits, appropriately marked "NOT AN EXIT," "TO BASEMENT," "STOREROOM," etc.? ☐ ☐ ☐ ☐
4. Are exit doors side-hinged? ☐ ☐ ☐ ☐
5. Are all exits kept free of obstructions? ☐ ☐ ☐ ☐
6. Are there sufficient exits to permit prompt escape in case of emergency? ☐ ☐ ☐ ☐

7. Are special precautions taken to protect employees during construction and repair operations? ☐ ☐ ☐ ☐
8. Where exiting will be through frameless glass door, glass exit doors, etc., and the doors fully tempered, and do they meet the safety requirements for human impact? ☐ ☐ ☐ ☐

General Work Environment

1. Are all work sites clean and orderly? ☐ ☐ ☐ ☐
2. Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant? ☐ ☐ ☐ ☐
3. Are all spilled materials or liquids cleaned up immediately? ☐ ☐ ☐ ☐
4. Are the minimum number of toilets and washing facilities provided? ☐ ☐ ☐ ☐
5. Are all toilets and washing facilities clean and sanitary? ☐ ☐ ☐ ☐
6. Are all work areas adequately illuminated? ☐ ☐ ☐ ☐

Walkways

1. Are aisles and passageways kept clear? ☐ ☐ ☐ ☐
2. Are aisles and walkways marked as appropriate? ☐ ☐ ☐ ☐
3. Are wet surfaces covered with nonslip materials? ☐ ☐ ☐ ☐
4. Are holes in the floor, sidewalk, or other walking surface repaired Properly, covered, or otherwise made safe? ☐ ☐ ☐ ☐

Medical Services And First Aid

1. If medical and first aid facilities are not in proximity to your workplace, is At least one employee on each shift currently qualified to render first aid? ☐ ☐ ☐ ☐
2. Are medical personnel readily available for advice and consultation on Matters of employee health? ☐ ☐ ☐ ☐
3. Are emergency phone numbers posted? ☐ ☐ ☐ ☐
4. Are first aid kits easily accessible to each work area, with necessary Supplies available, periodically inspected, and replenished as needed? ☐ ☐ ☐ ☐
5. Have first aid kit supplies been approved by a physician, indicating they are adequate for a particular area or operation? ☐ ☐ ☐ ☐

XXIII. CONFINED SPACE ENTRY ____________________

XXIX. STAIRWAYS AND LADDERS ____________________

XXX. FALL PROTECTION ____________________

XXXI. EXCAVATIONS ____________________

XXXII. DRILLING ____________________

XXXIII. EARTHMOVING EQUIPMENT ____________________

XXXIV. DEMOLITION ____________________

XXXVI. HAND AND POWER TOOLS ____________________

SAFE WORK PRACTICES (3.1)

1. All tools operated according to manufacture's instructions.	☐	☐	☐	☐
2. All hand and power tools maintained in a safe condition and inspected before each use.	☐	☐	☐	☐
3. Defective tools are tagged and removed from service until repaired.	☐	☐	☐	☐
4. PPE is selected and used according to tool-specific hazards.	☐	☐	☐	☐
5. Power tools are not carried or lowered by cord or hose.	☐	☐	☐	☐
6. Tools are disconnected from energy sources when not in use.	☐	☐	☐	☐
7. Safety guards remain installed or are promptly replaced after repair.	☐	☐	☐	☐
8. Tools are stored properly.	☐	☐	☐	☐
9. Cordless tools and recharging units conform to electrical standards.	☐	☐	☐	☐
10. Tools used in explosive environments are rated for such use.	☐	☐	☐	☐
11. Knife or blade hand tools are used with the proper precautions.	☐	☐	☐	☐
12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stresses.	☐	☐	☐	☐
General (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
14. Tools are tested daily to assure safety devices are operating properly.	☐	☐	☐	☐
15. Damaged tools are removed from service until repaired.	☐	☐	☐	☐
16. Power operated tools designed to accommodate guards and used.	☐	☐	☐	☐
17. Rotating or moving parts on tools are properly guarded.	☐	☐	☐	☐
18. Machines designed for fixed locations are secured or anchored.	☐	☐	☐	☐
19. Floor and bench-mounted grinders are provided with work rests.	☐	☐	☐	☐
20. Guards are provided at point of operation, nip points, rotating parts.	☐	☐	☐	☐
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.	☐	☐	☐	☐
Electric-Powered Tools (3.2.2)				
22. Electric tools are double insulated or grounded according to SOP HS-23.	☐	☐	☐	☐
23. Electric cords are not used for hoisting or lowering tools	☐	☐	☐	☐

24. Hand-held tools are equipped with appropriate on/off controls. ☐ ☐ ☐ ☐

25. Electric tools used in damp/wet locations are approved or use GFCI. ☐ ☐ ☐ ☐

26. Portable, power-driven circular saws are equipped with proper guards. ☐ ☐ ☐ ☐

XXXV. CONCRETE AND MASONARY

XXXVI. AERIAL LIFTS

Safe Work Practices (3.1)

1. Only authorized and trained personnel operating aerial lifts. ☐ ☐ ☐ ☐
2. Aerial lifts inspected by the operator prior to use. ☐ ☐ ☐ ☐
3. Lift controls tested by the operator each day prior to use. ☐ ☐ ☐ ☐
4. Personnel wearing full body harness with lanyard attached to boom or platform. ☐ ☐ ☐ ☐
5. Lanyards not attached to adjacent structures or equipment while in aerial lift. ☐ ☐ ☐ ☐
6. Personnel standing firmly on the floor of lift platform. ☐ ☐ ☐ ☐
7. Personnel remain in the platform at all times and do not climb to adjacent structures. ☐ ☐ ☐ ☐
8. Standard guardrail or equivalent protection provided on lift platform. ☐ ☐ ☐ ☐
9. Aerial lifts provided with upper and lower controls. ☐ ☐ ☐ ☐
10. Lower controls operated only with permission of personnel in lift, unless emergency. ☐ ☐ ☐ ☐
11. Lift controls properly marked and legible, and capacity rating posted. ☐ ☐ ☐ ☐
12. Modifications to aerial lift certified in writing by manufacturer. ☐ ☐ ☐ ☐

Aerial Lift Positioning (3.2.2)

13. Aerial lifts positioned on firm, level surface with brakes set. ☐ ☐ ☐ ☐
14. Wheel chocks used on inclines. ☐ ☐ ☐ ☐
15. Outriggers positioned on solid surfaces or cribbing when used. ☐ ☐ ☐ ☐
16. Safe clearance distance maintained while working near overhead powerlines. ☐ ☐ ☐ ☐
17. Safe clearance distance maintained while traveling under overhead powerlines. ☐ ☐ ☐ ☐
18. Aerial lifts not moved when boom is elevated and personnel are working in platforms. ☐ ☐ ☐ ☐
19. Boom is properly cradled and outriggers stowed prior to moving lift. ☐ ☐ ☐ ☐

Aerial Lift Operation (3.2.3)

20. Safe operating manual should be available for review and use by aerial lift operators.	☐	☐	☐	☐
21. Aerial lift operators know boom and basket load limits and do not exceed them.	☐	☐	☐	☐
22. Aerial lift platforms are free of slippery conditions.	☐	☐	☐	☐
23. Personnel not standing or working below aerial lift operations.	☐	☐	☐	☐
24. Warning signs or barricades provided under aerial lift operations.	☐	☐	☐	☐
25. Counterweight swing radius barricaded or flagged.	☐	☐	☐	☐
26. Aerial lifts not being used as cranes.	☐	☐	☐	☐
27. Platforms free of attachments such as cables, wires, chains, or ropes.	☐	☐	☐	☐
28. Aerial lifts not operated in winds exceeding 30 miles per hour.	☐	☐	☐	☐
29. Platform foot switch physically operated and not mechanically blocked.	☐	☐	☐	☐
30. Insulating portion of aerial lift is not altered in any manner.	☐	☐	☐	☐
31. Aerial lifts used indoors have exhaust properly vented to control carbon monoxide exposures.	☐	☐	☐	☐

Appendix E

Source Area Delineation Analytical/MIP Results

November 6 – 21, 2000 Source Area Delineation Effort
Onsite Mobile Laboratory Analytical Results

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1363

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 20'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130010.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	17	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	24	
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	61	
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1363

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 20'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130010.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1364

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 36'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130011.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	15	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	19	
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	150	E
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1364

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 36'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130011.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1364R

Lab Name: AMS, Inc.   FL QAP: 909159

Collected: 11/13/00   Client: CH2M   Location: Kings   Project: Landfill

Matrix: (soil/water) WATER   Lab Sample ID: SP-01 36'

Sample wt/vol: 5.0 (g/ml) ML   Lab File ID: 11140003.D

Level: (low/med) LOW   Date Received: 11/13/00

% Moisture: not dec.   Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	4	U
75-01-4	Vinyl Chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
75-09-2	Methylene Chloride	4	U
156-59-2	trans-1,2-Dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
594-20-7	2,2-Dichloropropane	4	U
156-60-5	cis-1,2-Dichloroethene	17	
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
71-55-6	1,1,1-Trichloroethane	4	U
563-58-6	1,1-Dichloropropene	4	U
56-23-5	Carbon Tetrachloride	4	U
107-06-2	1,2-Dichloroethane	4	U
71-43-2	Benzene	4	U
79-01-6	Trichloroethene	21	
78-87-5	1,2-Dichloropropane	4	U
75-27-4	Bromodichloromethane	4	U
74-95-3	Dibromomethane	4	U
10061-01-5	cis-1,3-Dichloropropene	4	U
108-88-3	Toluene	4	U
10061-02-6	trans-1,3-Dichloropropene	4	U
79-00-5	1,1,2-Trichloroethane	4	U
142-28-9	1,3-Dichloropropane	4	U
127-18-4	Tetrachloroethene	180	
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
108-38-3	meta,para-Xylene	8	U
95-47-6	ortho-Xylene	4	U
100-42-5	Styrene	4	U
98-82-8	Isopropylbenzene	4	U
75-25-2	Bromoform	4	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1364R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 36'

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 11140003.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	4	U
96-18-4	1,2,3-Trichloropropane	4	U
103-65-1	n-Propylbenzene	4	U
108-86-1	Bromobenzene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
95-49-8	2-Chlorotoluene	4	U
106-43-4	4-Chlorotoluene	4	U
98-06-6	tert-Butylbenzene	4	U
95-36-3	1,2,4-Trimethylbenzene	4	U
135-98-8	sec-Butylbenzene	4	U
527-84-4	para-Isopropyltoluene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
104-51-8	n-Butylbenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4	U
87-61-6	1,2,3-Trichlorobenzene	4	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1365

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 40'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130012.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	19	
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	320	E
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1365

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 40'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130012.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1365R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 40'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11140004.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	20	U
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	22	
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	550	
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	40	U
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1365R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 40'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11140004.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1366

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130013.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	7	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	46	
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	4200	E
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	3	
100-41-4	Ethylbenzene	10	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	8	
95-47-6	ortho-Xylene	4	
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1366

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130013.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1366R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 44'

Sample wt/vol: 0.0 (g/ml) ML Lab File ID: 11140007.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl Chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
75-09-2	Methylene Chloride	2000	U
156-59-2	trans-1,2-Dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
594-20-7	2,2-Dichloropropane	2000	U
156-60-5	cis-1,2-Dichloroethene	2000	U
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
71-55-6	1,1,1-Trichloroethane	2000	U
563-58-6	1,1-Dichloropropene	2000	U
56-23-5	Carbon Tetrachloride	2000	U
107-06-2	1,2-Dichloroethane	2000	U
71-43-2	Benzene	2000	U
79-01-6	Trichloroethene	2000	U
78-87-5	1,2-Dichloropropane	2000	U
75-27-4	Bromodichloromethane	2000	U
74-95-3	Dibromomethane	2000	U
10061-01-5	cis-1,3-Dichloropropene	2000	U
108-88-3	Toluene	2000	U
10061-02-6	trans-1,3-Dichloropropene	2000	U
79-00-5	1,1,2-Trichloroethane	2000	U
142-28-9	1,3-Dichloropropane	2000	U
127-18-4	Tetrachloroethene	54000	
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
108-38-3	meta,para-Xylene	4000	U
95-47-6	ortho-Xylene	2000	U
100-42-5	Styrene	2000	U
98-82-8	Isopropylbenzene	2000	U
75-25-2	Bromoform	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1366R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 44'

Sample wt/vol: 0.0 (g/ml) ML Lab File ID: 11140007.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
103-65-1	n-Propylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
95-49-8	2-Chlorotoluene	2000	U
106-43-4	4-Chlorotoluene	2000	U
98-06-6	tert-Butylbenzene	2000	U
95-36-3	1,2,4-Trimethylbenzene	2000	U
135-98-8	sec-Butylbenzene	2000	U
527-84-4	para-Isopropyltoluene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
104-51-8	n-Butylbenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1367

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130014.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	45	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	4	
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	440	E
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	18	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1367

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11130014.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/13/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1367R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11140006.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	47	
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	790	
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	27	
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	40	U
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1367R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-01 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11140006.D

Level: (low/med) LOW Date Received: 11/13/00

% Moisture: not dec. Date Analyzed: 11/14/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1371

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11150006.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	9400	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	140	J
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1371

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11150006.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1370

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11150005.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	48	
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	13	J
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	2100	E
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	43	
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	15	J
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1370

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11150005.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1370R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 48'

Sample wt/vol: 0.2 (g/ml) ML Lab File ID: 11150007.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	100	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	100	U
74-83-9	Bromomethane	100	U
75-00-3	Chloroethane	100	U
75-69-4	Trichlorofluoromethane	100	U
75-35-4	1,1-Dichloroethene	100	U
75-09-2	Methylene Chloride	100	U
156-59-2	trans-1,2-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
594-20-7	2,2-Dichloropropane	100	U
156-60-5	cis-1,2-Dichloroethene	78	J
67-66-3	Chloroform	100	U
74-97-5	Bromochloromethane	100	U
71-55-6	1,1,1-Trichloroethane	100	U
563-58-6	1,1-Dichloropropene	100	U
56-23-5	Carbon Tetrachloride	100	U
107-06-2	1,2-Dichloroethane	100	U
71-43-2	Benzene	100	U
79-01-6	Trichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
75-27-4	Bromodichloromethane	100	U
74-95-3	Dibromomethane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
79-00-5	1,1,2-Trichloroethane	100	U
142-28-9	1,3-Dichloropropane	100	U
127-18-4	Tetrachloroethene	2900	
124-48-1	Dibromochloromethane	100	U
106-93-4	1,2-Dibromoethane	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U
630-20-6	1,1,1,2-Tetrachloroethane	100	U
108-38-3	meta,para-Xylene	200	U
95-47-6	ortho-Xylene	100	U
100-42-5	Styrene	100	U
98-82-8	Isopropylbenzene	100	U
75-25-2	Bromoform	100	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1370R

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 48'

Sample wt/vol: 0.2 (g/ml) ML Lab File ID: 11150007.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	100	U
96-18-4	1,2,3-Trichloropropane	100	U
103-65-1	n-Propylbenzene	100	U
108-86-1	Bromobenzene	100	U
108-67-8	1,3,5-Trimethylbenzene	100	U
95-49-8	2-Chlorotoluene	100	U
106-43-4	4-Chlorotoluene	100	U
98-06-6	tert-Butylbenzene	100	U
95-36-3	1,2,4-Trimethylbenzene	100	U
135-98-8	sec-Butylbenzene	100	U
527-84-4	para-Isopropyltoluene	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
104-51-8	n-Butylbenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
96-12-8	1,2-Dibromo-3-chloropropane	100	U
120-82-1	1,2,4-Trichlorobenzene	100	U
87-68-3	Hexachlorobutadiene	100	U
91-20-3	Naphthalene	100	U
87-61-6	1,2,3-Trichlorobenzene	100	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1368

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150003.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	27	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	4	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	4	
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	25	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1368

Lab Name: AMS, Inc FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150003.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1369

Lab Name AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150004.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	13	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	3	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	9	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	1	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	6	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	3	J
95-47-6	ortho-Xylene	2	J
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1369

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-08 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150004.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1372

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11150008.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	7500	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1372

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11150008.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1373

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11150009.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	22	
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	950	
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	40	U
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1373

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 48'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11150009.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1374

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150010.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	17	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	5	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	1	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	22	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	1	J
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1374

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150010.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1375

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQUIP BLANK 1

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150011.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1375

Lab Name AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQUIP BLANK 1

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150011.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1376

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160003.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	40	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	4	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	8	
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	35	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	1	J
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1376

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160003.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1377

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160004.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	5	
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	3	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	1	J
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	16	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1377

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160004.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1378

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160007.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	9100	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1378

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160007.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1379

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160008.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	150	J
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1379

Lab Name AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160008.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1380

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-03 35'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160009.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	2300	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1380

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-03 35'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160009.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1381

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 2

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160010.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	1	J
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1381

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 2

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160010.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1382

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 3

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170006.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	1	J
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1382

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 3

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170006.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1383

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170007.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	71	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	7	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	30	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	1	J
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1383

Lab Name: AMS, Inc.   FL QAP: 909159

Collected: 11/13/00   Client: CH2M   Location: Kings   Project: Landfill

Matrix: (soil/water) WATER   Lab Sample ID: SP-07 44'

Sample wt/vol: 10.0 (g/ml) ML   Lab File ID: 11170007.D

Level: (low/med) LOW   Date Received: 11/17/00

% Moisture: not dec.   Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1384

Lab Name: AMS, Inc.   FL QAP: 909159

Collected: 11/13/00   Client: CH2M   Location: Kings   Project: Landfill

Matrix: (soil/water) WATER   Lab Sample ID: SP-07 48'

Sample wt/vol: 10.0 (g/ml) ML   Lab File ID: 11170008.D

Level: (low/med) LOW   Date Received: 11/17/00

% Moisture: not dec.   Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	44	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	3	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	6	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	1	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	43	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	3	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1384

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170008.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	1	J
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1385

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170009.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	300	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1385

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170009.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1386

Lab Name: AMS, Inc.   FL QAP: 909159

Collected: 11/13/00   Client: CH2M   Location: Kings   Project: Landfill

Matrix: (soil/water) WATER   Lab Sample ID: SP-29 48'

Sample wt/vol: 0.1 (g/ml) ML   Lab File ID: 11170010.D

Level: (low/med) LOW   Date Received: 11/17/00

% Moisture: not dec.   Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	520	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1386

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170010.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1387

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-26 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11170012.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	15	J
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	430	
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	40	U
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1387

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-26 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11170012.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1388

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11200003.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	100	
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	20	U
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	17	J
100-41-4	Ethylbenzene	50	
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	11	J
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1388

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11200003.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1389

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200005.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	17	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	3	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	20	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1389

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200005.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1390

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200006.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	25	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	41	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	4	
75-25-2	Bromoform	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1390

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200006.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	J
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	1	J
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	J
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	3	
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1391

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200007.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	43	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	J
79-01-6	Trichloroethene	1	J
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	71	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	6	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1391

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200007.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	3	
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	J
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	3	
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1392

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 36'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210006.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	
75-25-2	Bromoform	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1392

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 36'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210006.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	J
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	7	
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	4	
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1393

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 41'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210007.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	3	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	18	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	
95-47-6	ortho-Xylene	1	J
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	4	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1393

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 41'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210007.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	3	
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	6	
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	4	
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	J
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1394

Lab Name: AMS, Inc FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 46'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210008.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	58	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	120	E
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	1	J
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	5	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO

00-1394

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-32 46'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210008.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	1	J
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1395

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 4

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210009.D

Level: (low/med) LOW Date Received: 11/21/00

% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	2	J
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1395

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 4

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11210009.D

Level: (low/med) LOW Date Received: 11/21/00

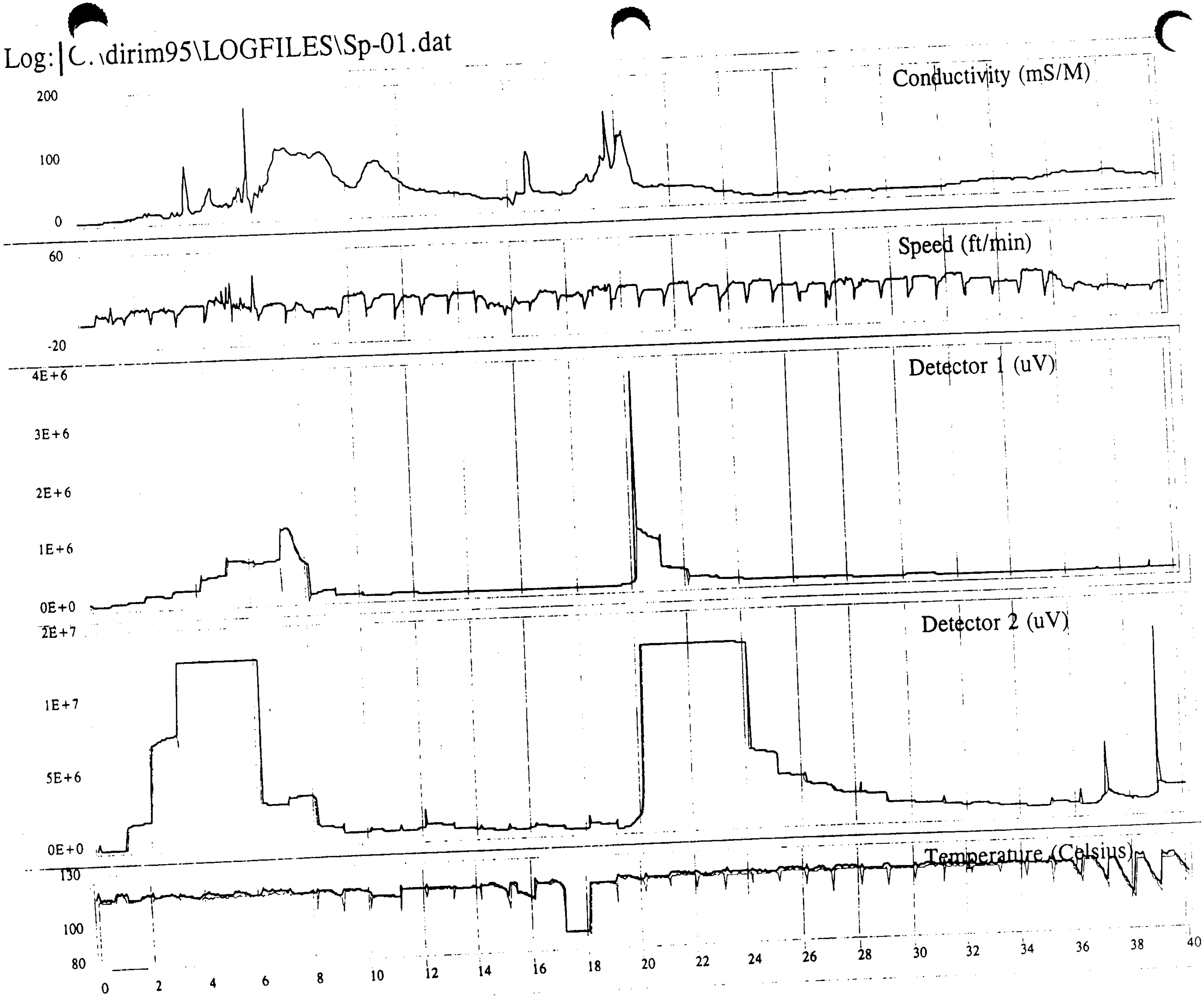
% Moisture: not dec. Date Analyzed: 11/21/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

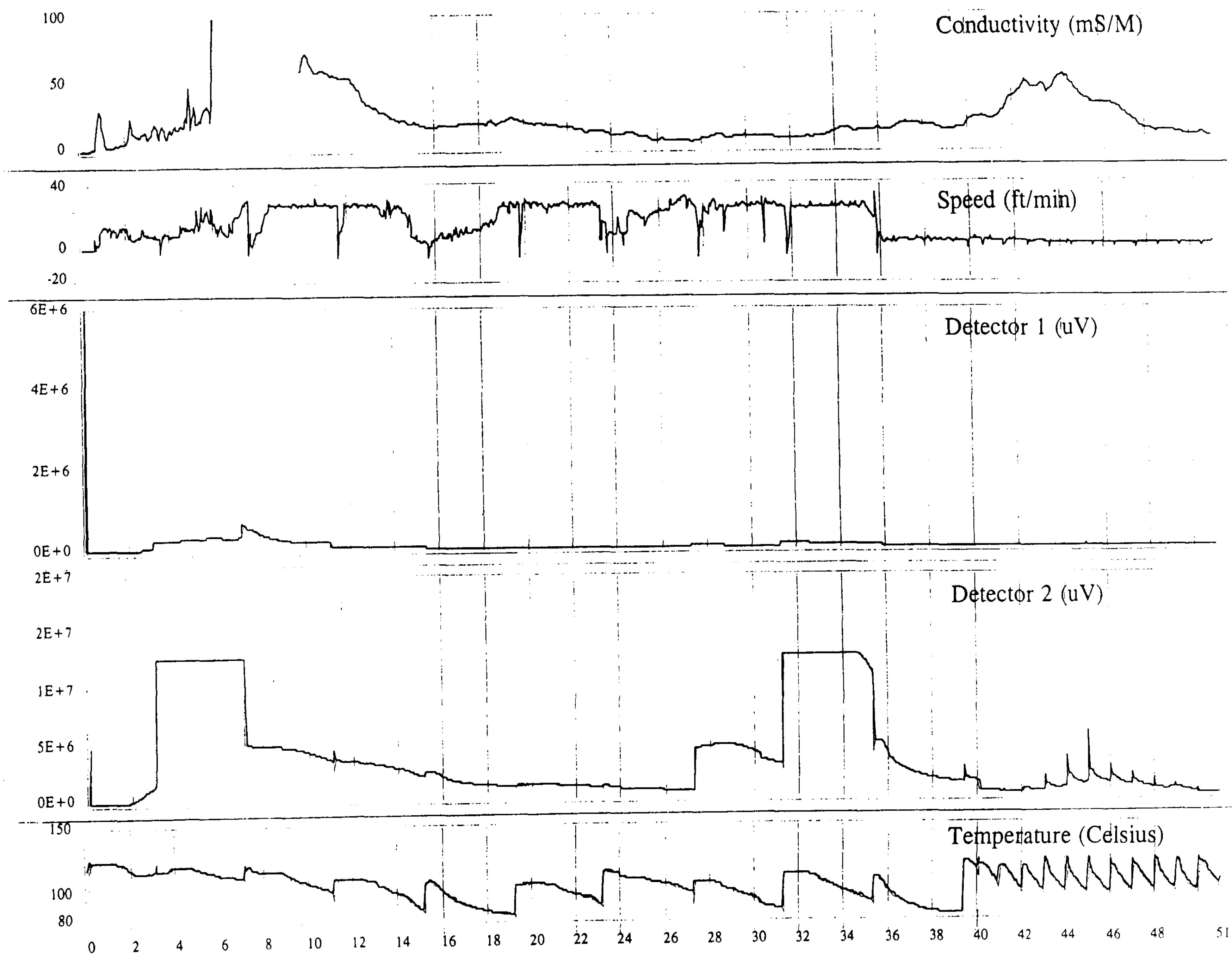
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

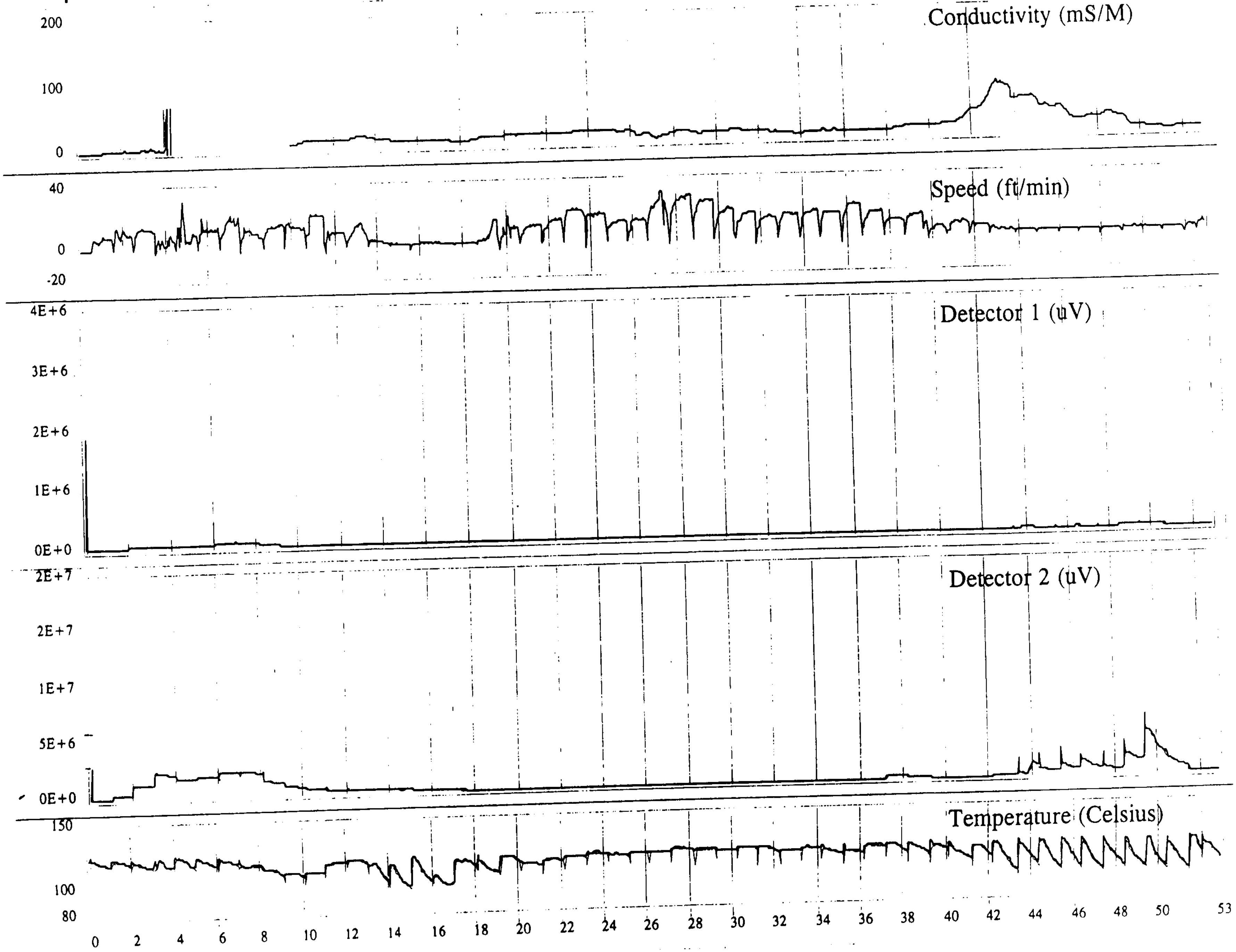
November 6 – 21, 2000 Source Area Delineation Effort
MIP Results


Log: C:\dirim95\LOGFILES\Sp-01.dat
Conductivity (mS/M)
200
100
0
Speed (ft/min)
60
-20
Detector 1 (uV)
4E+6
3E+6
2E+6
1E+6
0E+0
Detector 2 (uV)
2E+7
1E+7
5E+6
0E+0
Temperature (Celsius)
130
100
80
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

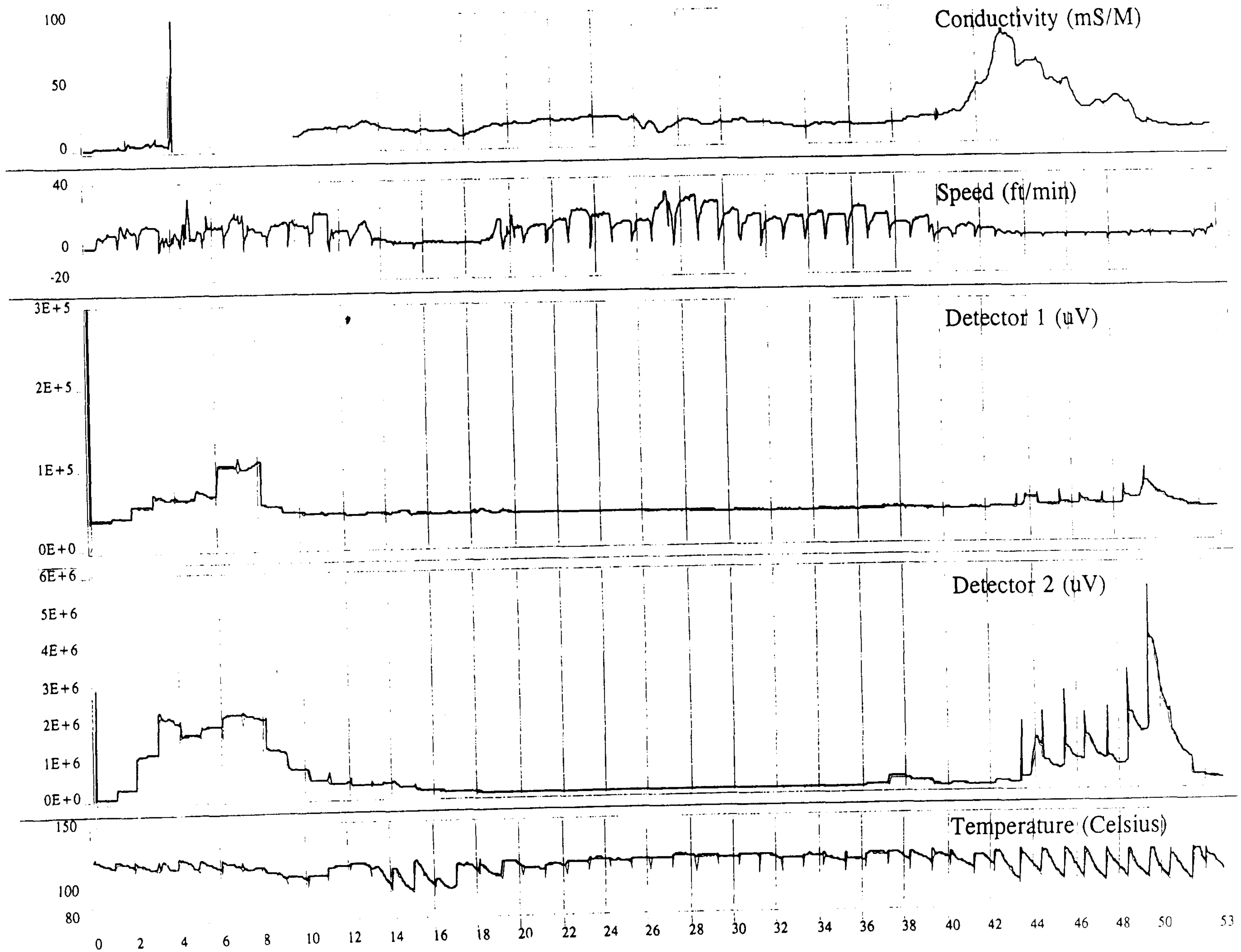
Log: C:\dirim95\LOGFILES\Sp-01-r.dat



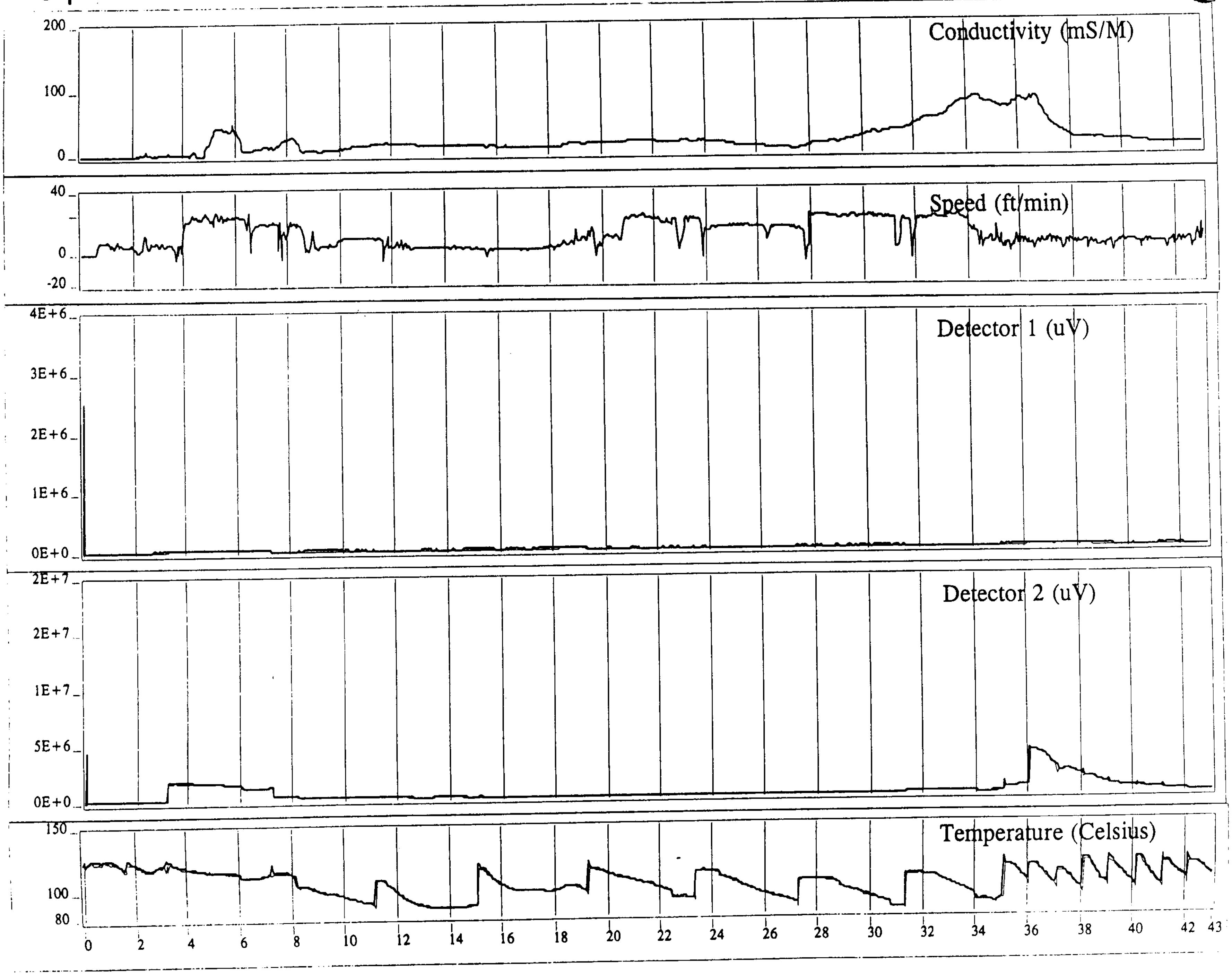
Log: dirim95\LOGFILES\Sp-02.dat



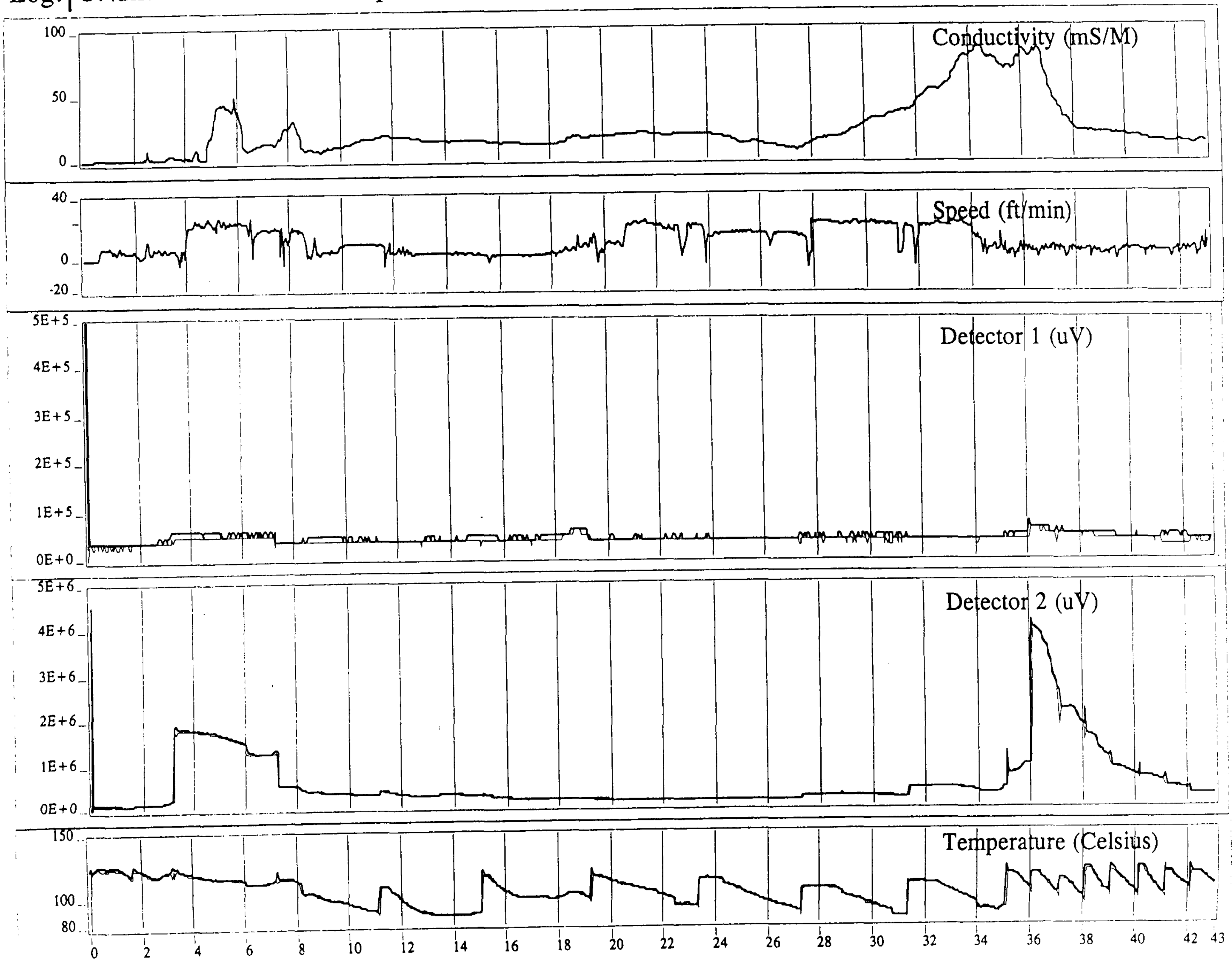
Log: C:\dirim95\LOGFILES\Sp-02.dat



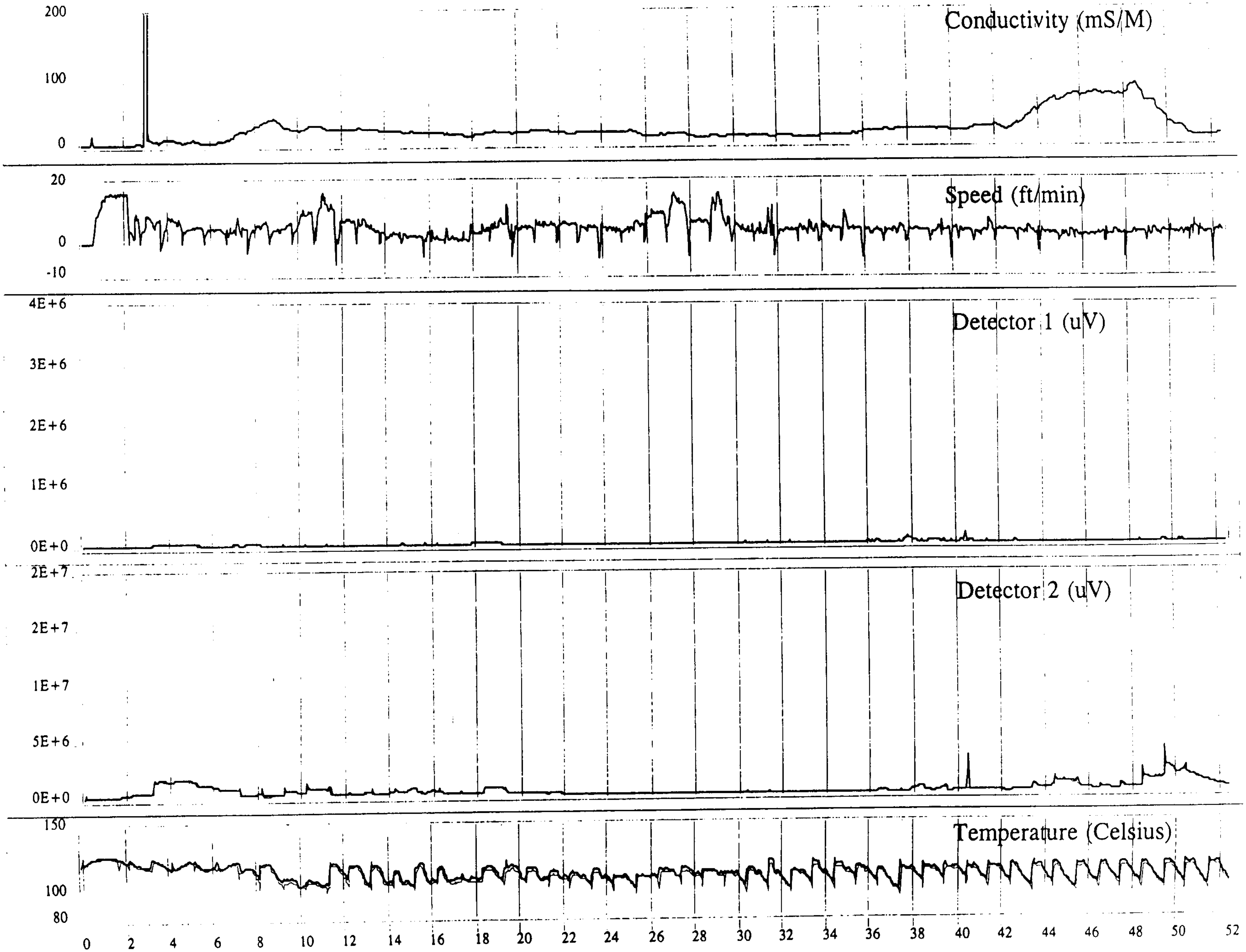
Log: \dirim95\LOGFILES\Sp-03.dat



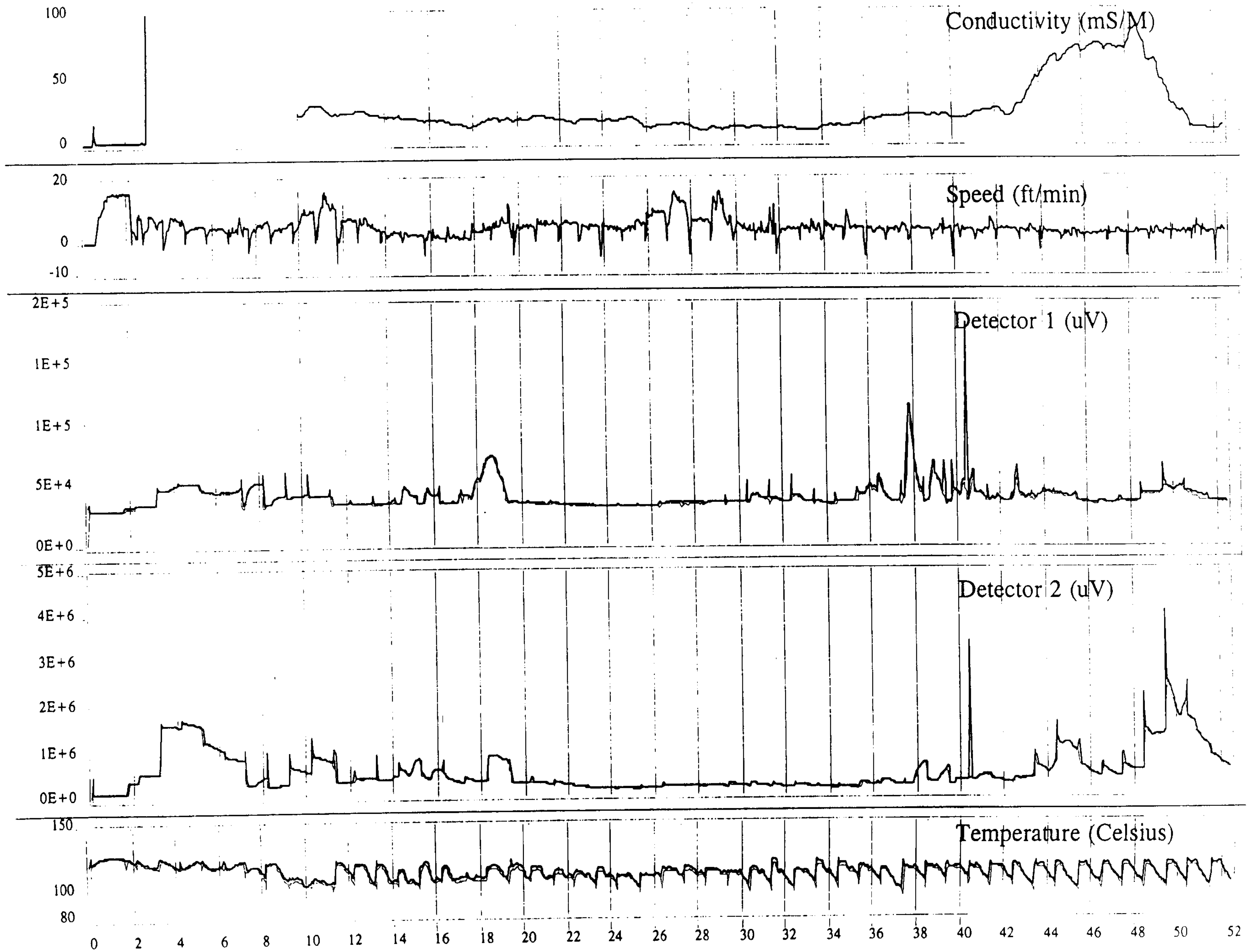
Log: C:\dirim95\LOGFILES\Sp-03.dat

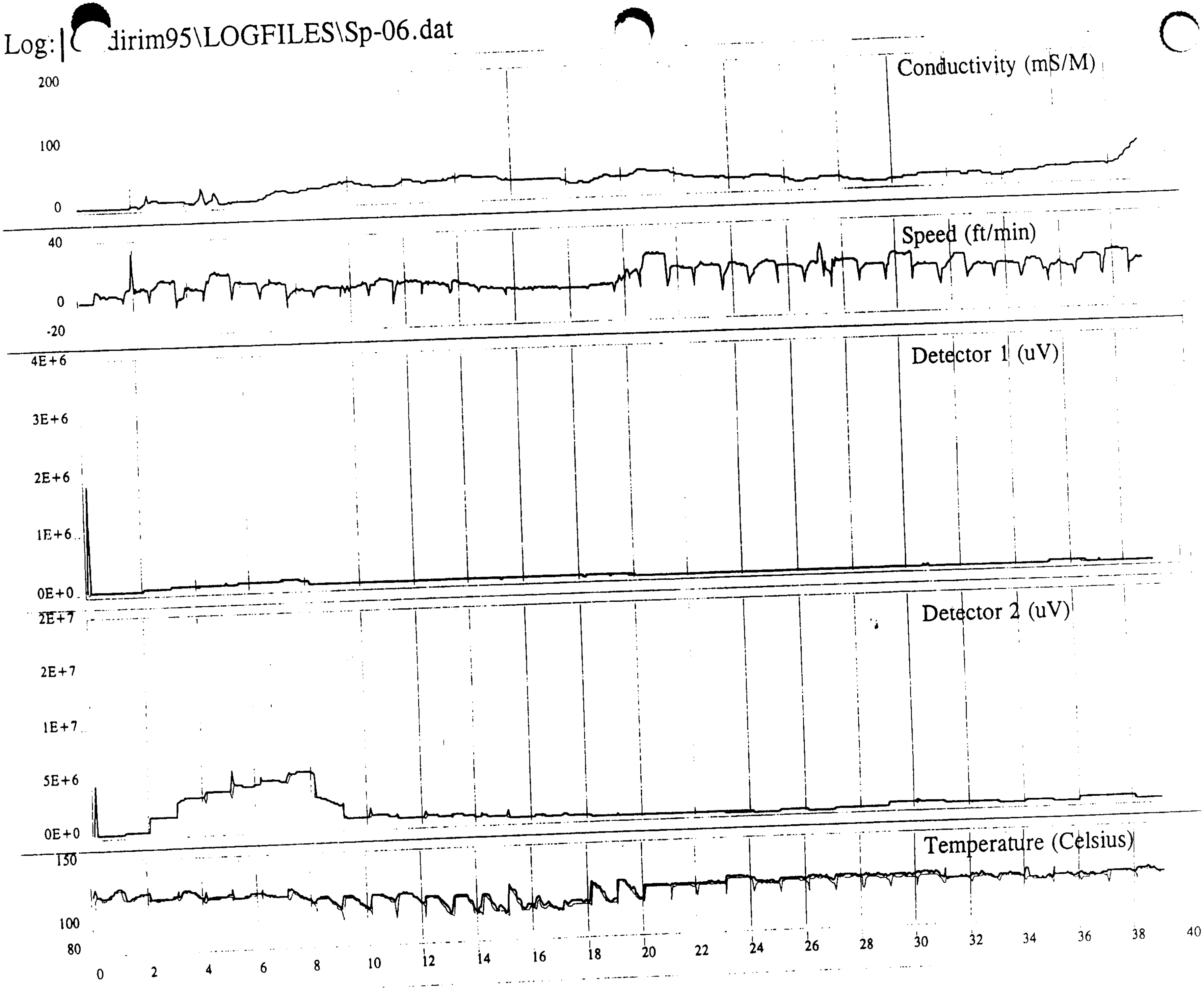


Log: \dirim95\LOGFILES\Sp-04.dat

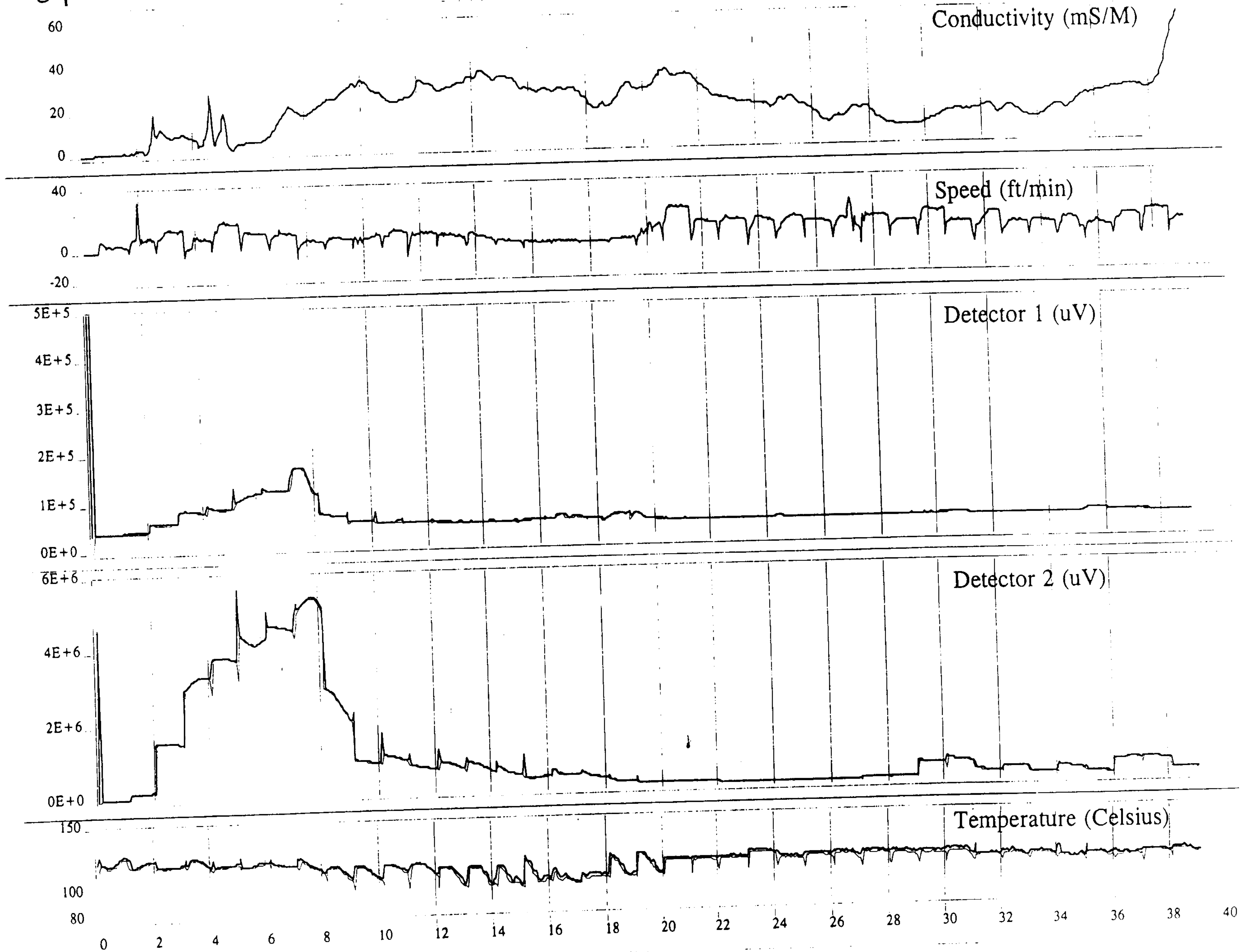


Log: C:\dirim95\LOGFILES\Sp-04.dat

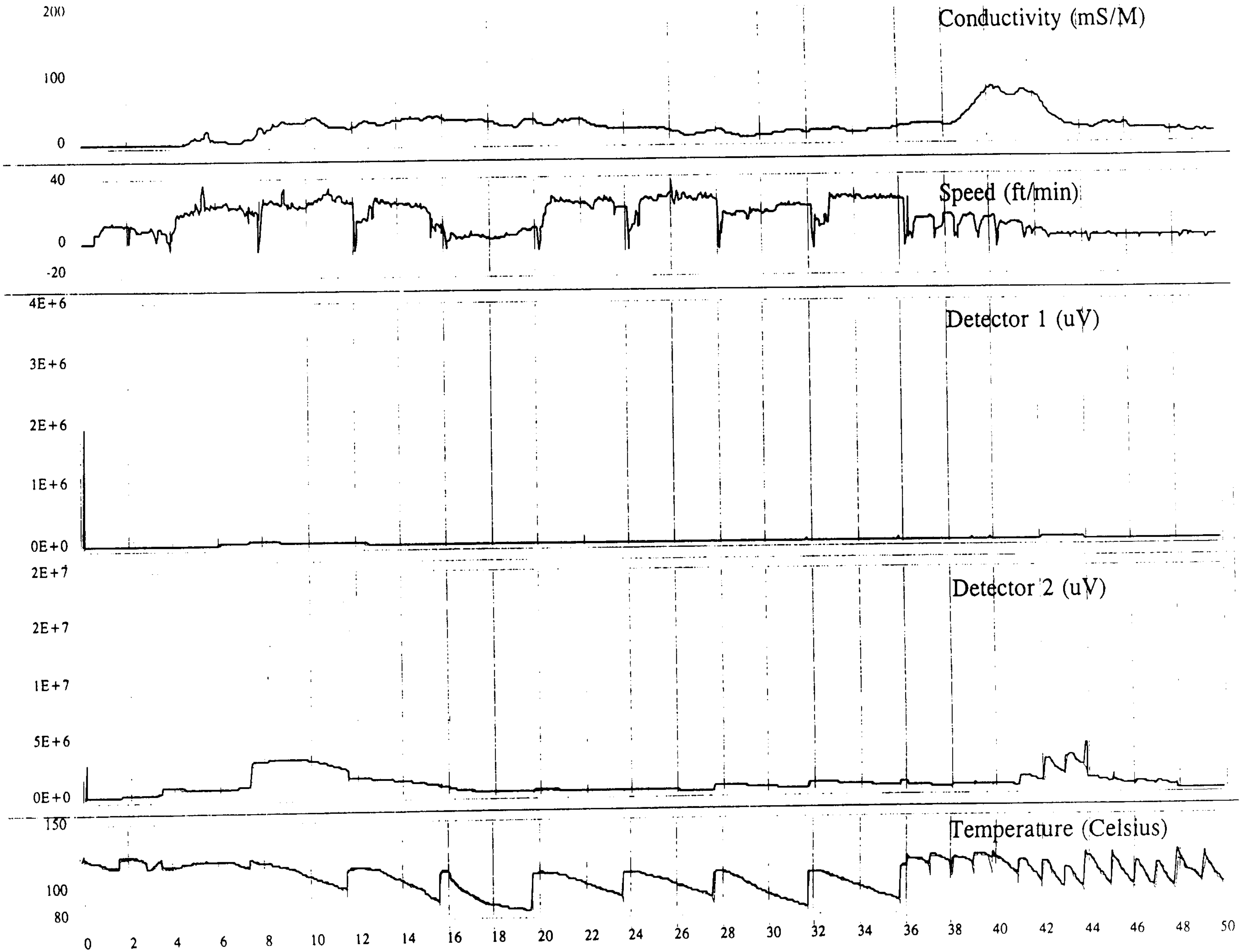



Log: | dirim95\LOGFILES\Sp-06.dat
Conductivity (mS/M)
200
100
0
Speed (ft/min)
40
0
-20
Detector 1 (uV)
4E+6
3E+6
2E+6
1E+6
0E+0
Detector 2 (uV)
2E+7
2E+7
1E+7
5E+6
0E+0
Temperature (Celsius)
150
100
80
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

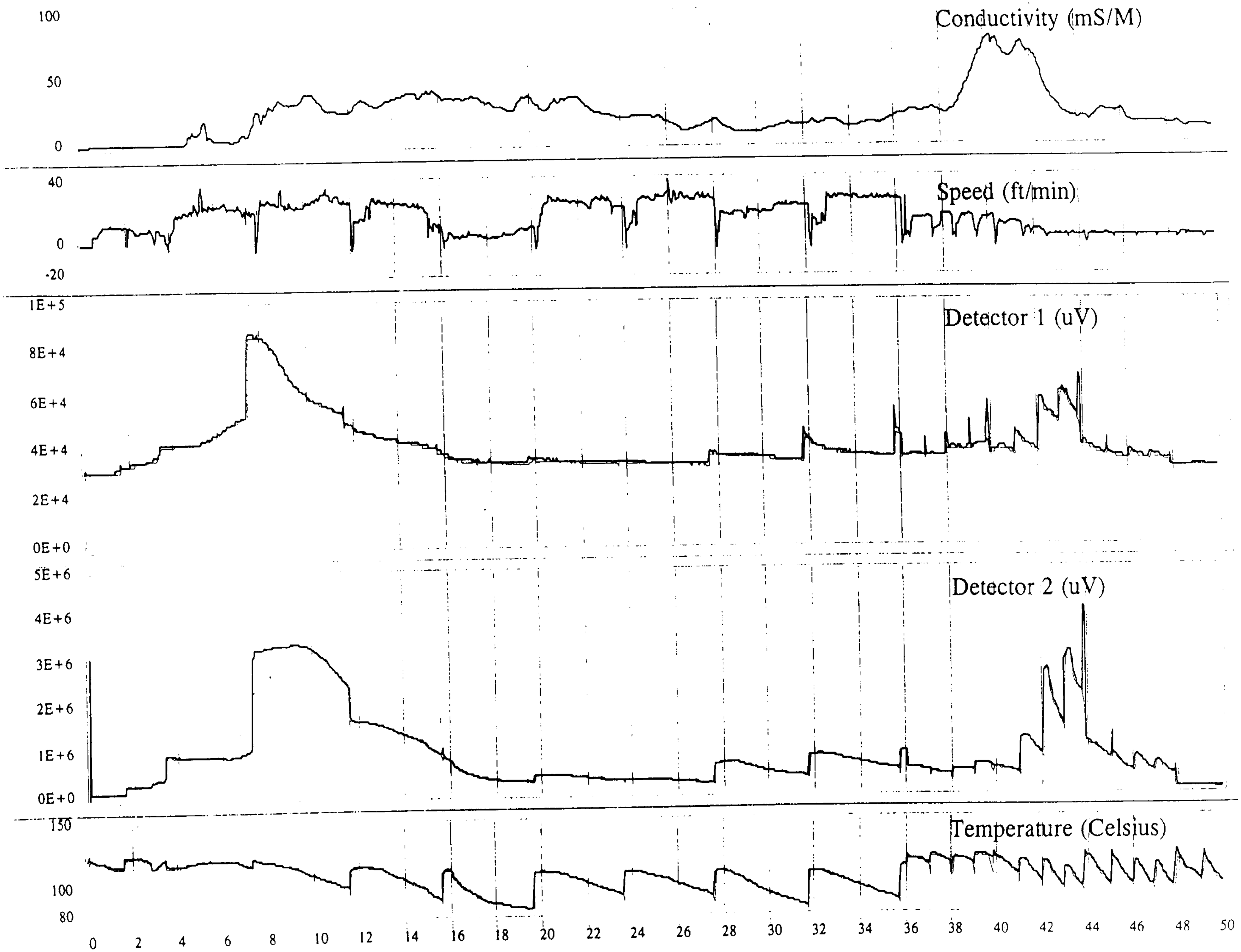
Log: C:\dirim95\LOGFILES\Sp-06.dat



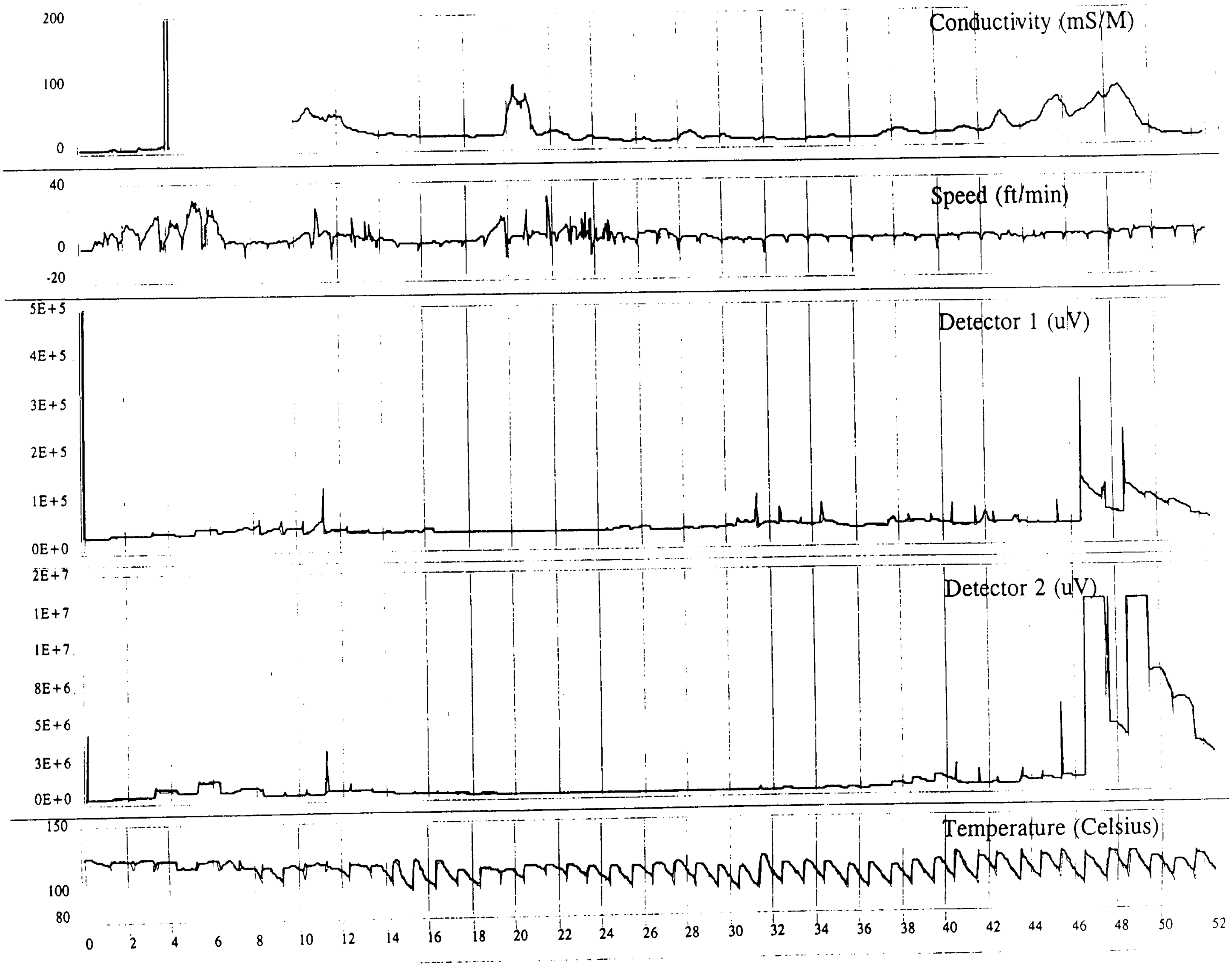
Log: dirim95\LOGFILES\Sp-06-r.dat



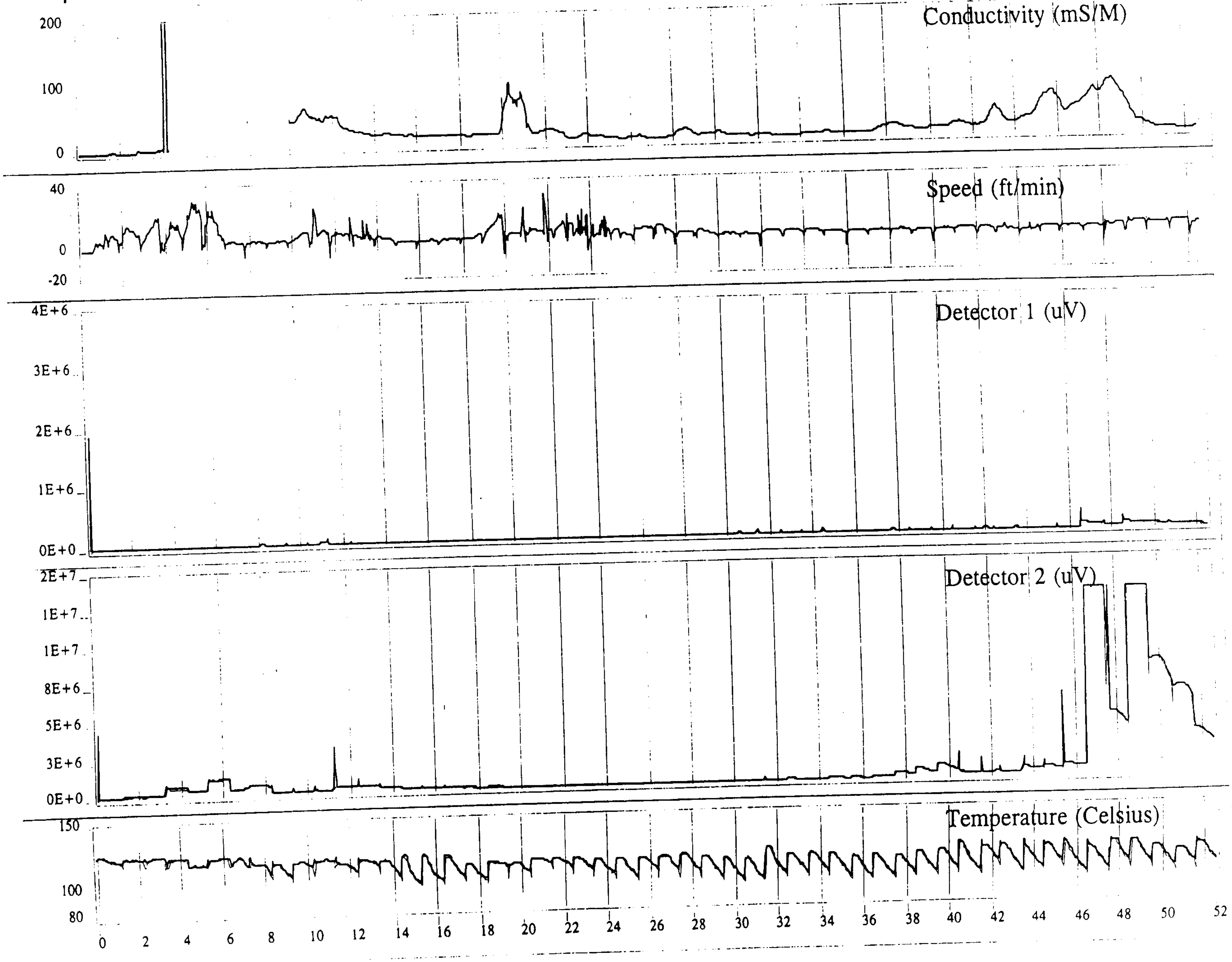
Log: C:\dirim95\LOGFILES\Sp-06-r.dat



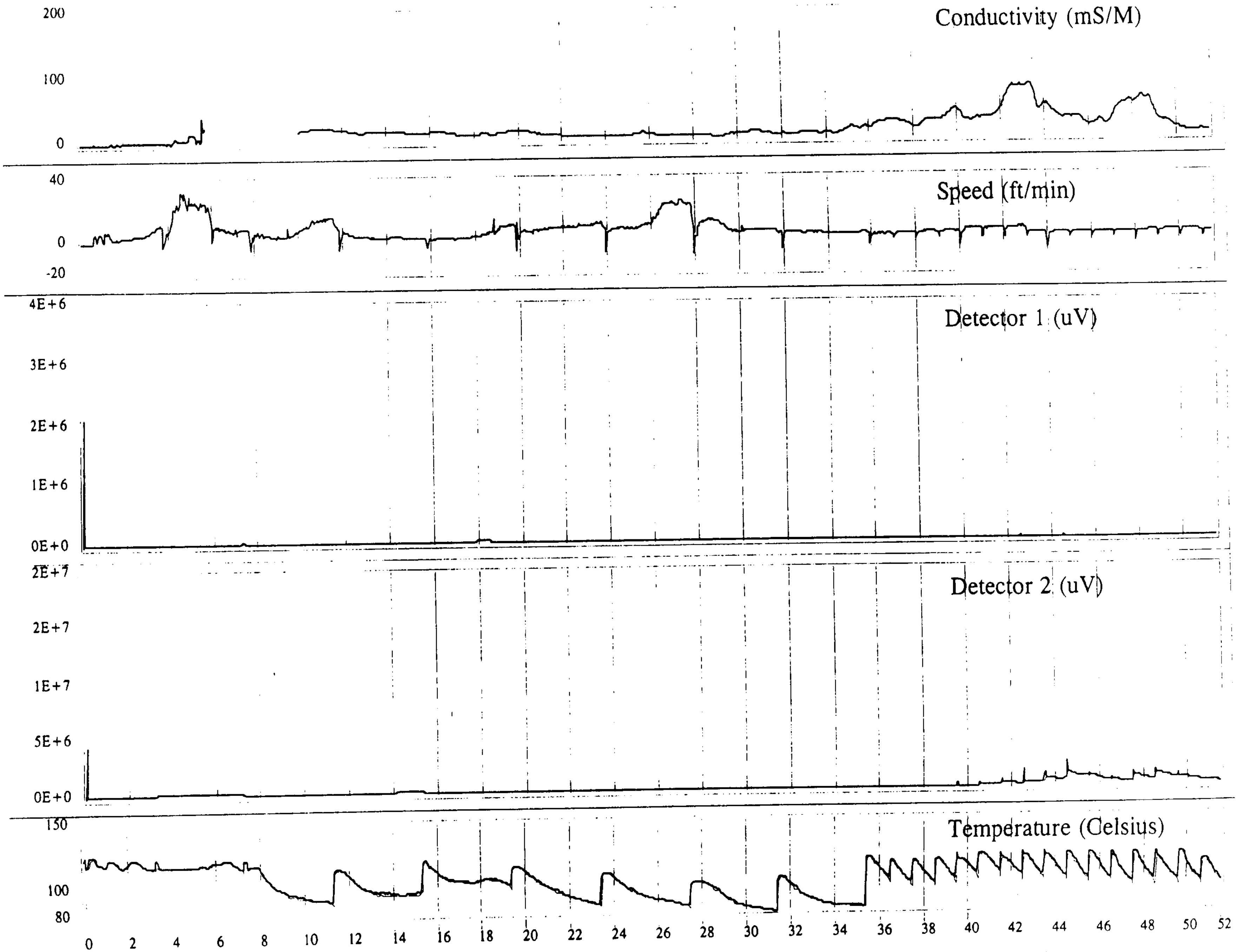
Log: \dirim95\LOGFILES\Sp-08.dat



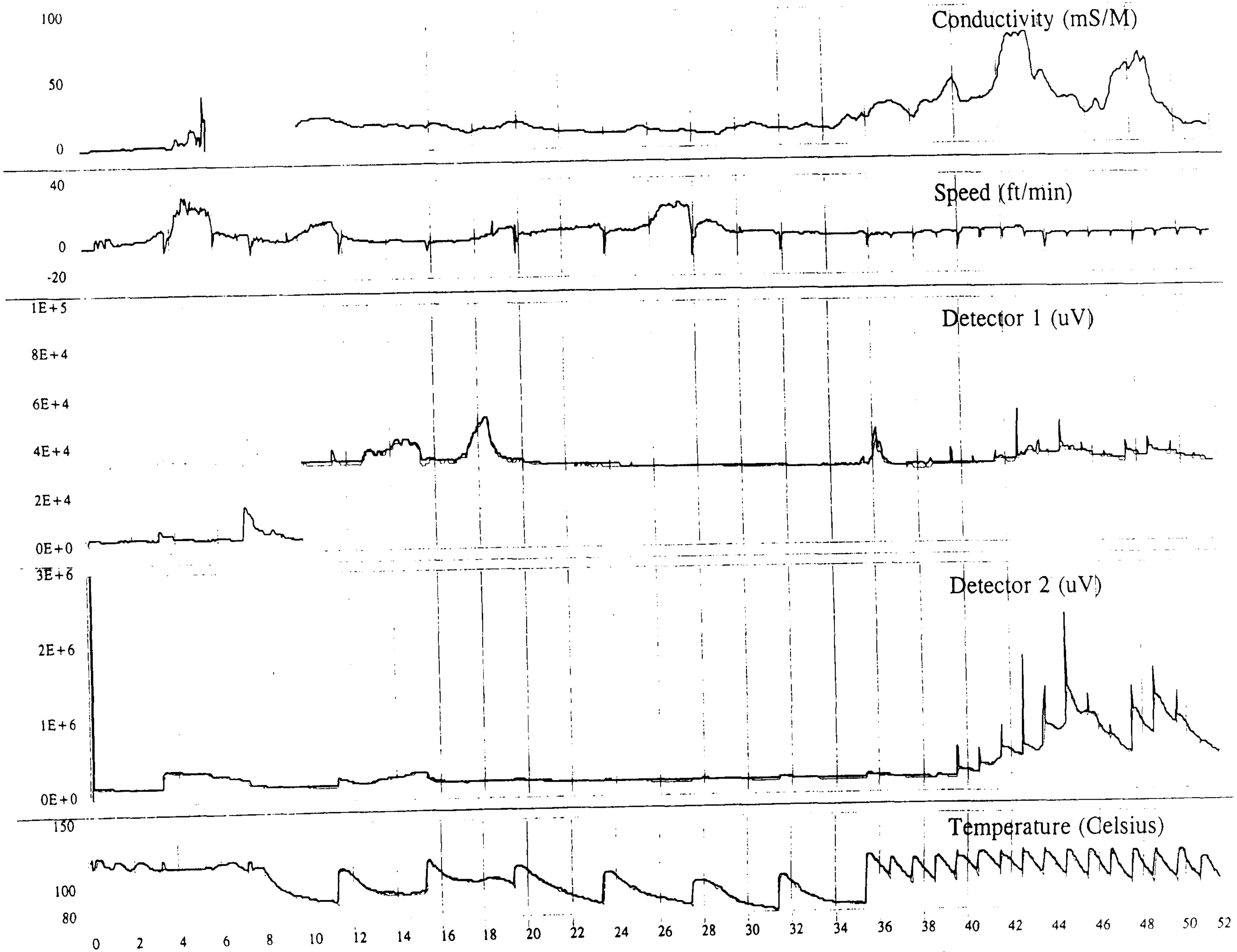
Log: C:\dirim95\LOGFILES\Sp-08.dat



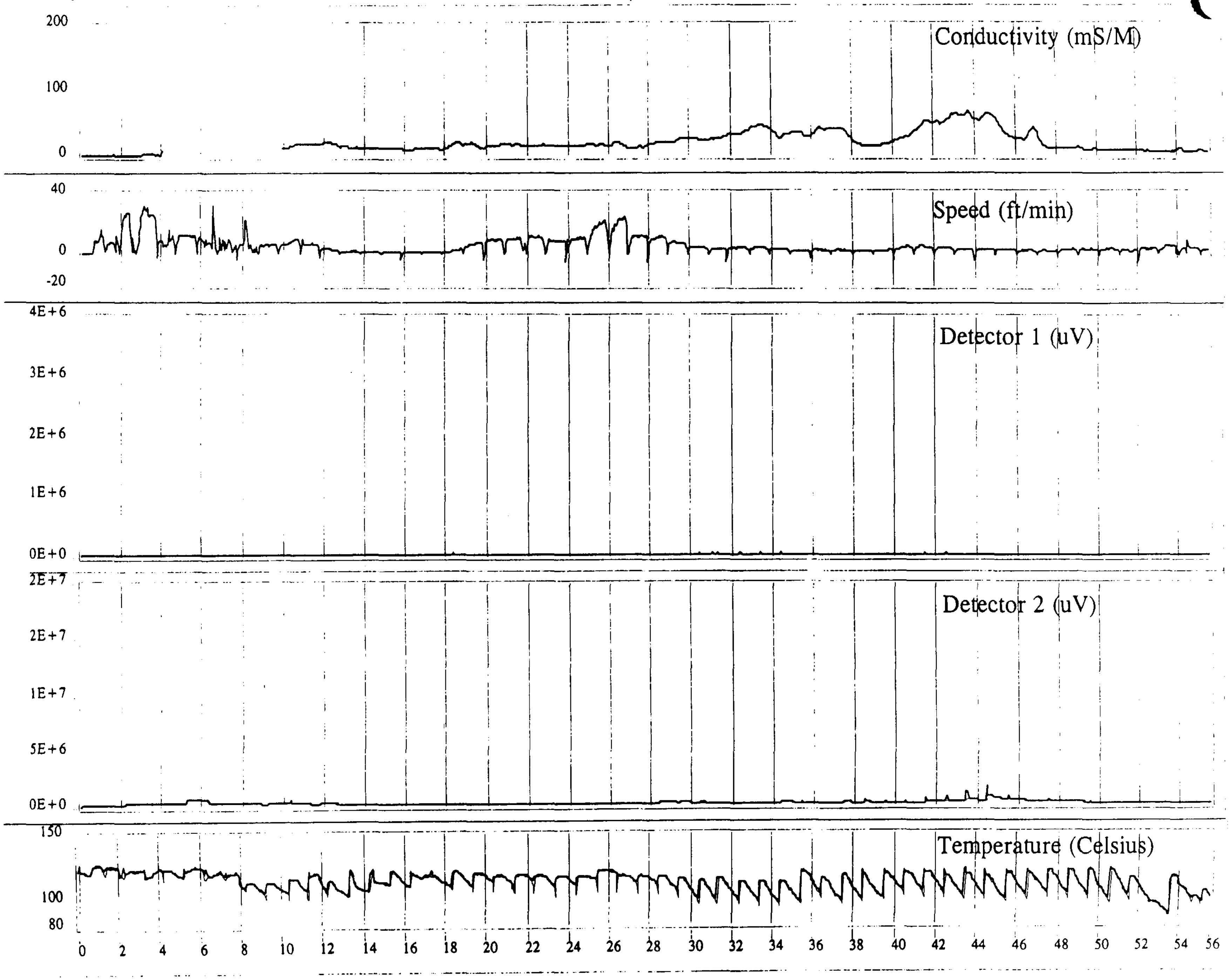
Log: dirim95\LOGFILES\Sp-09.dat



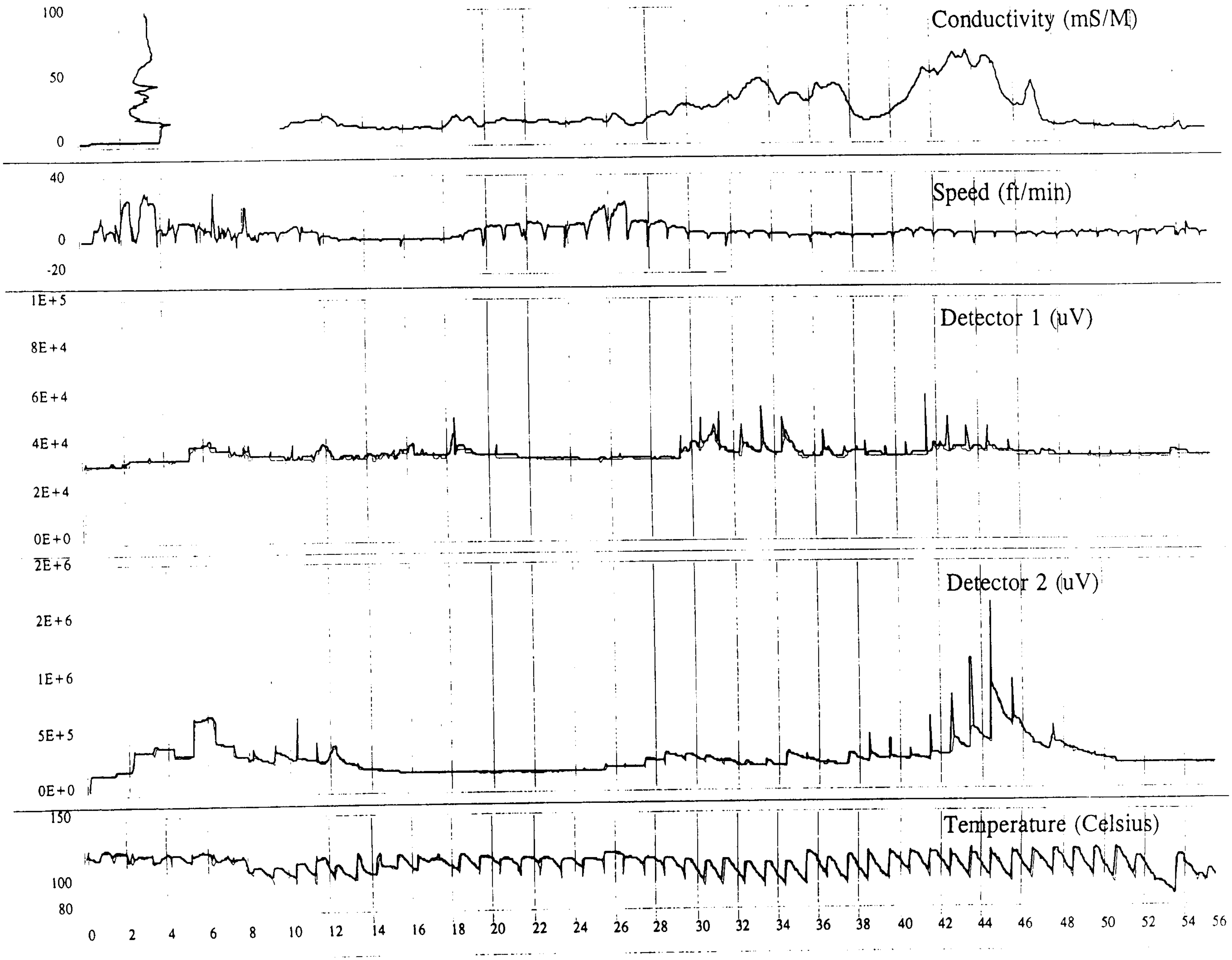
Log: C:\dirim95\LOGFILES\Sp-09.dat



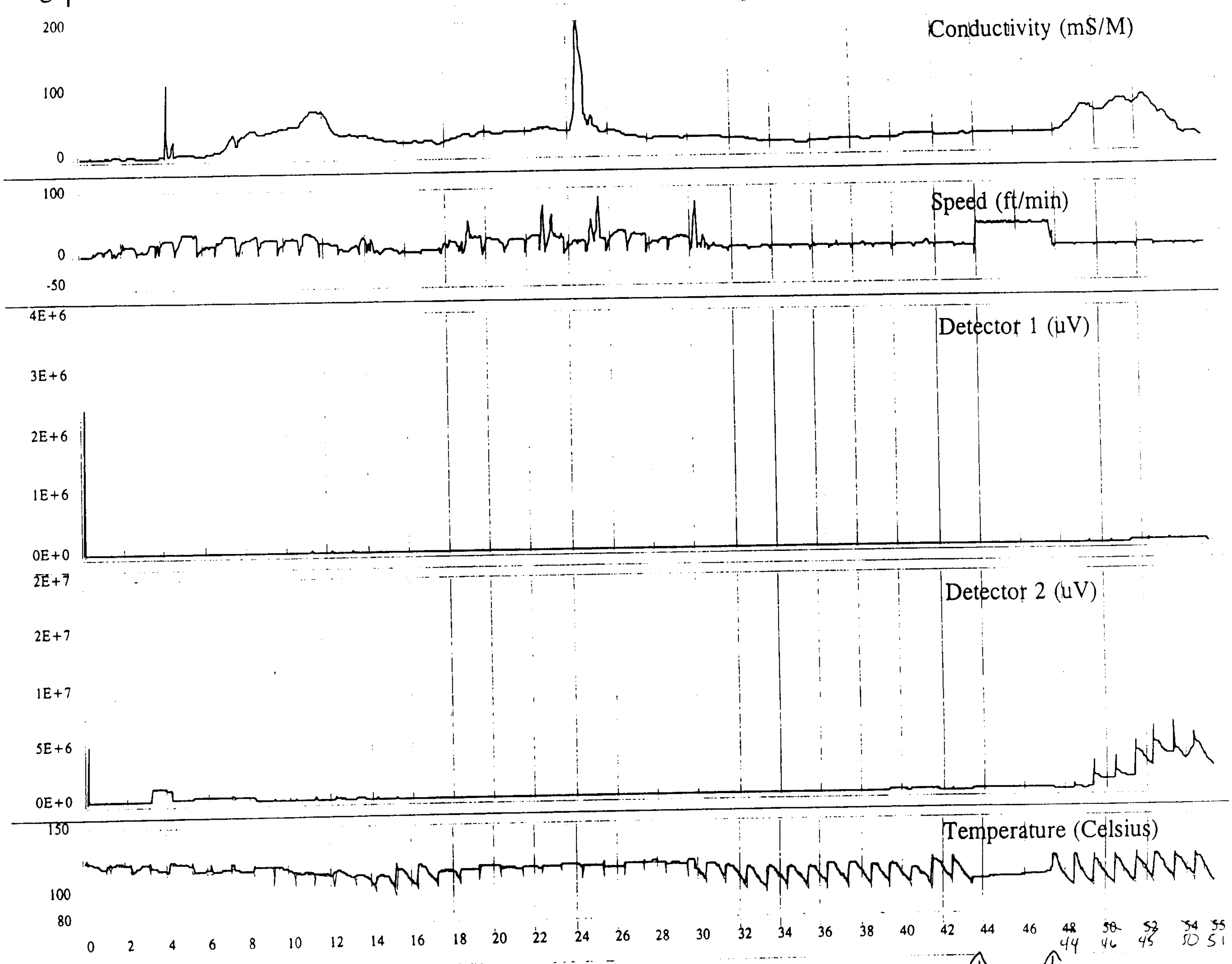
Log:\dirim95\LOGFILES\Sp-13.dat



Log: C:\dirim95\LOGFILES\Sp-13.dat



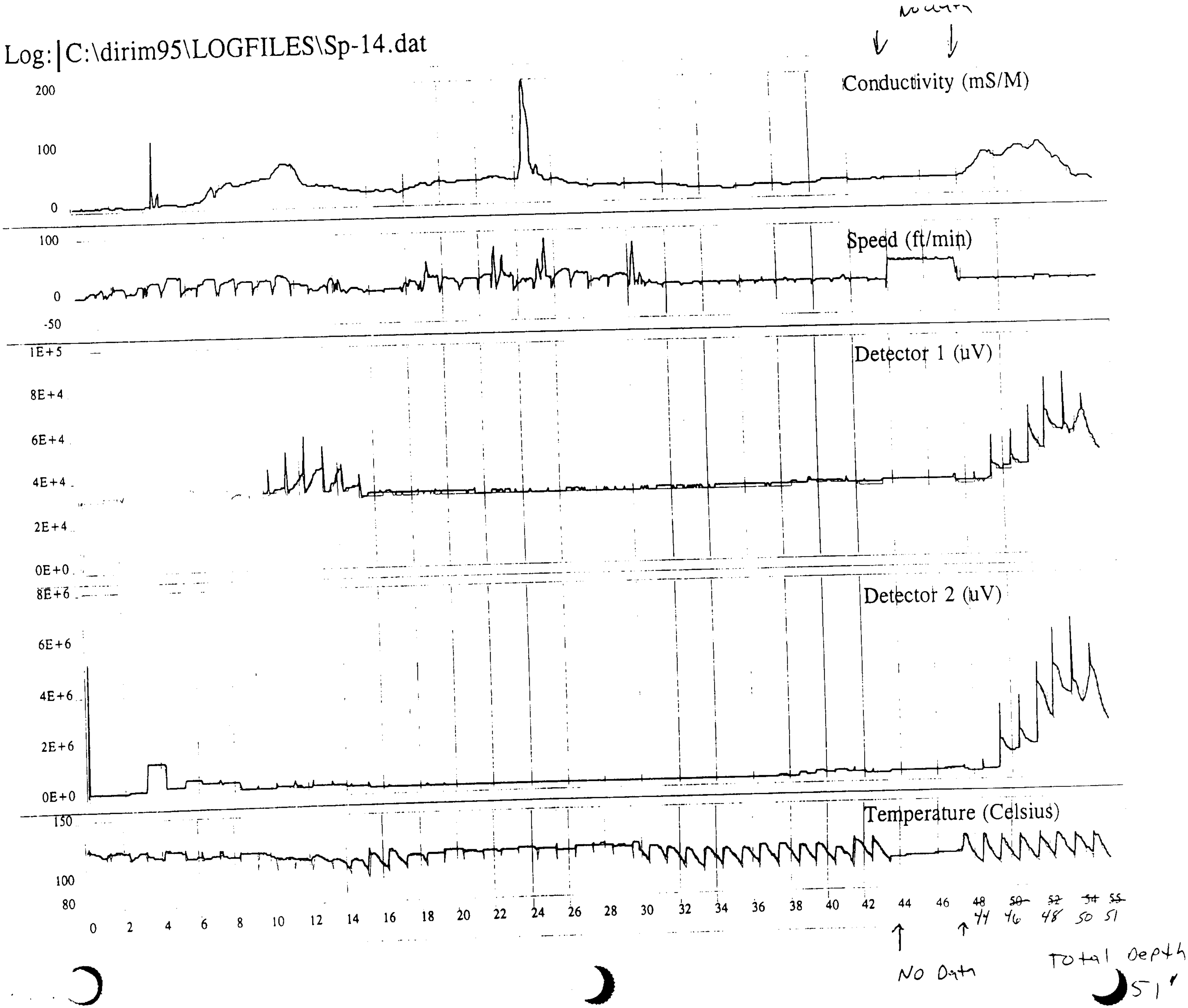
Log: C:\dirim95\LOGFILES\Sp-14.dat



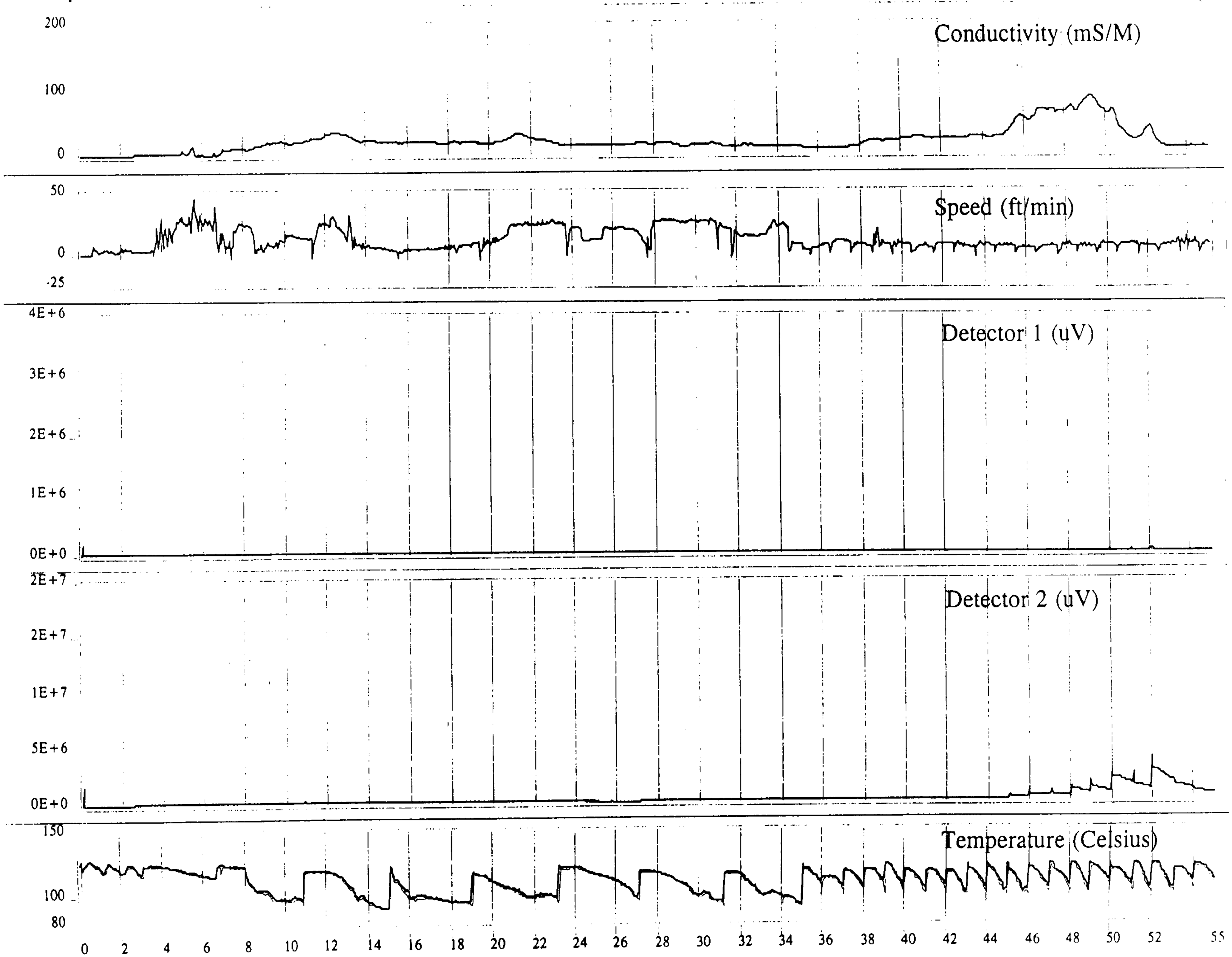
NO Data

Total Depth -> 51'

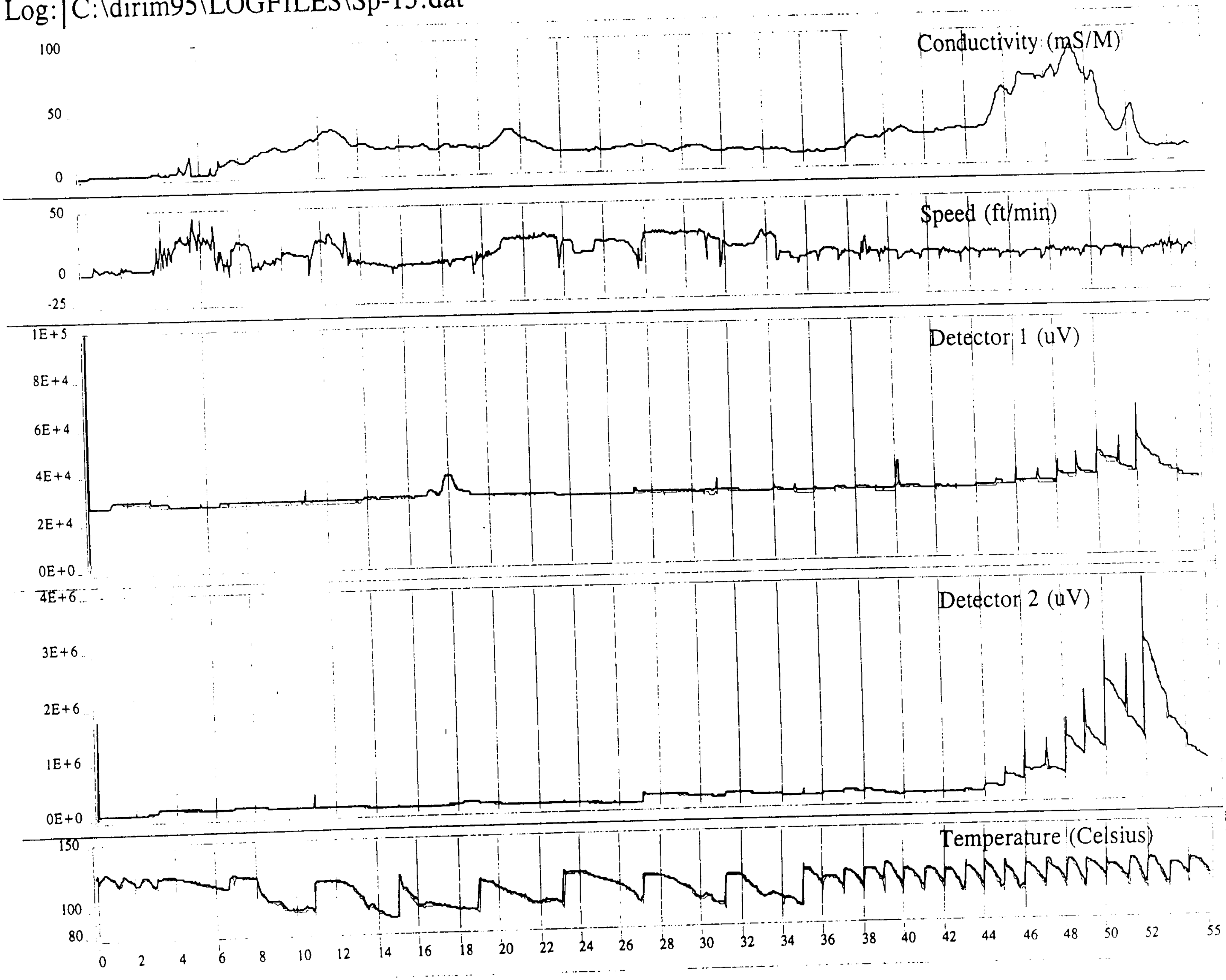
Log: C:\dirim95\LOGFILES\Sp-14.dat



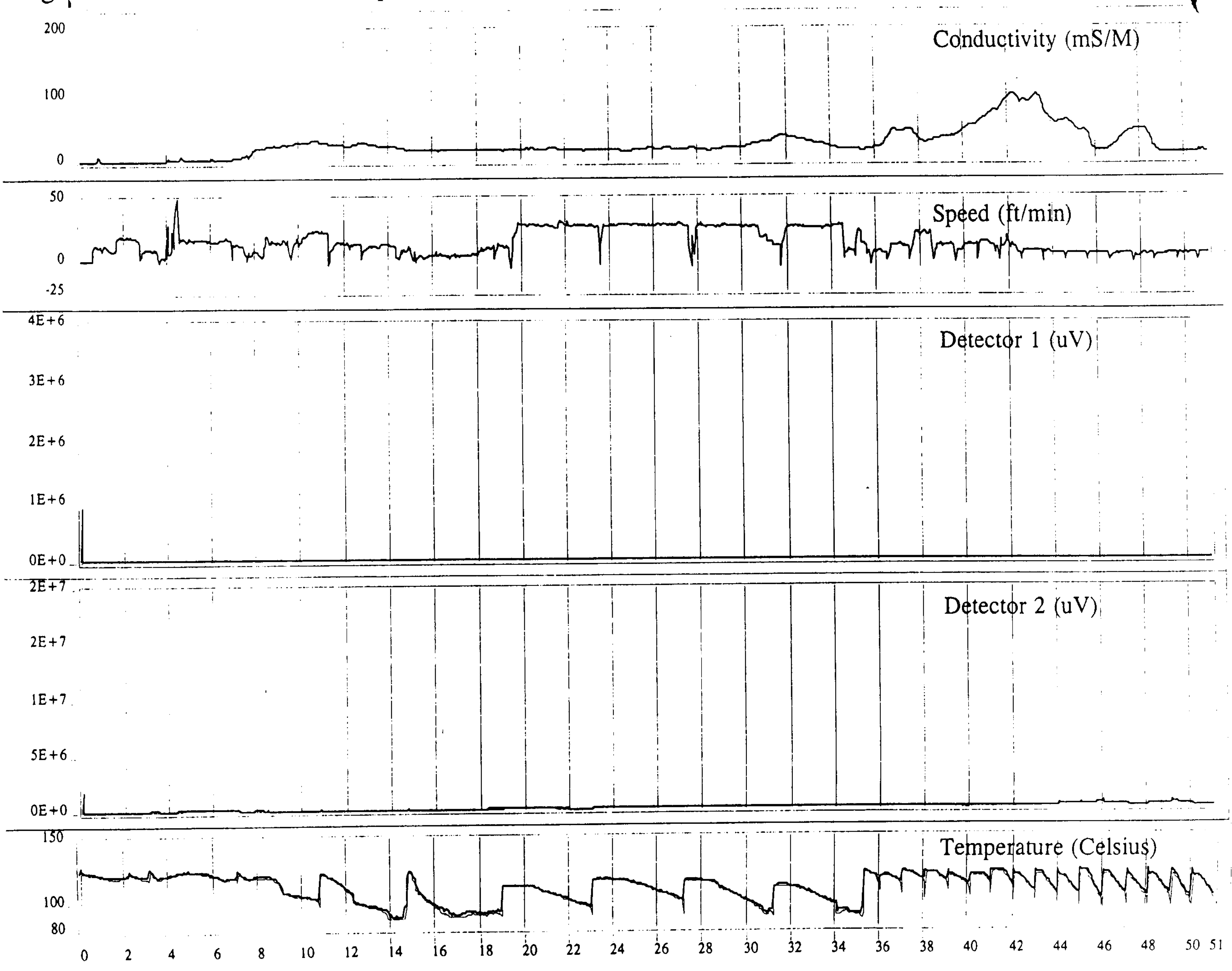
Log: .\dirim95\LOGFILES\Sp-15.dat



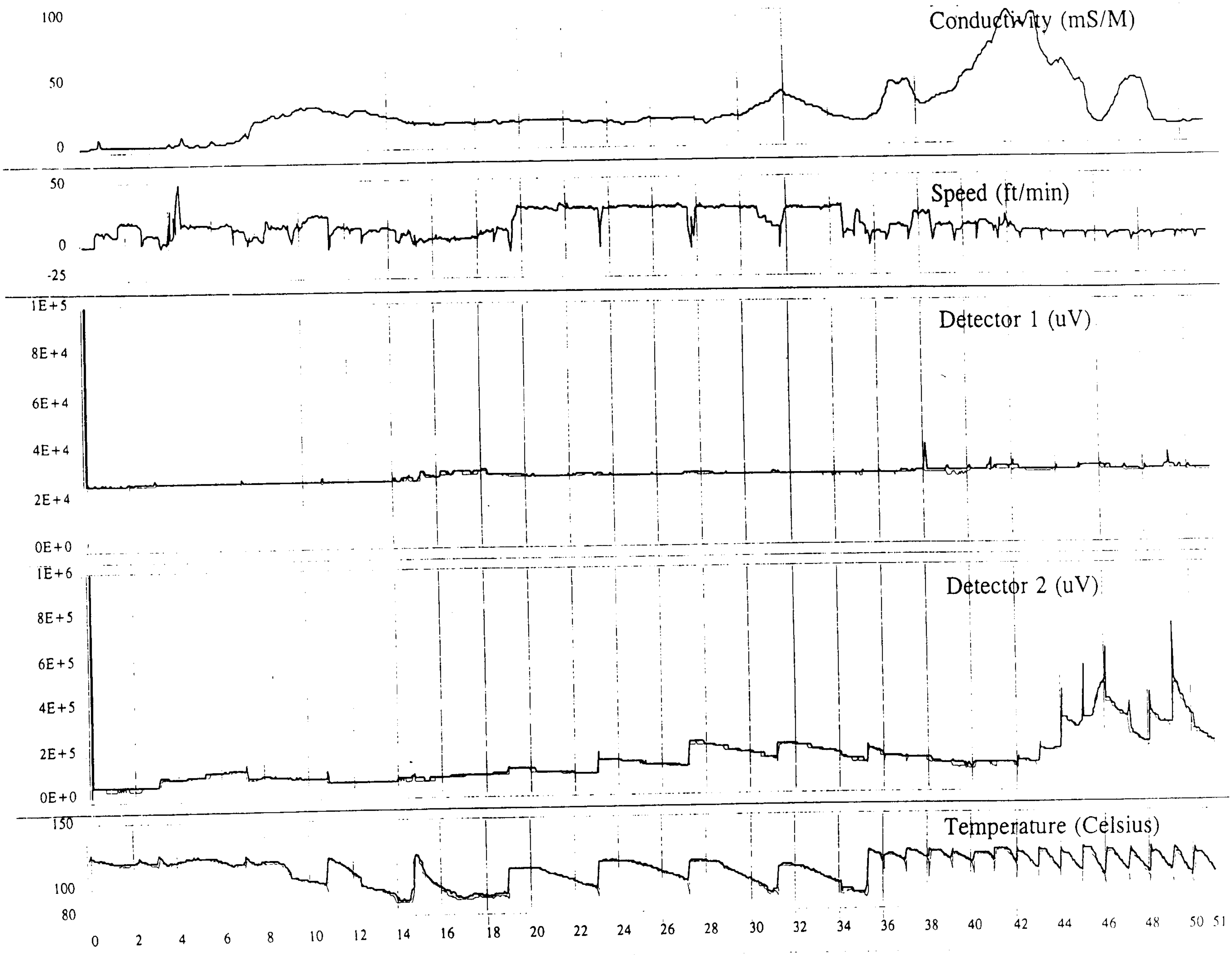
Log: C:\dirim95\LOGFILES\Sp-15.dat



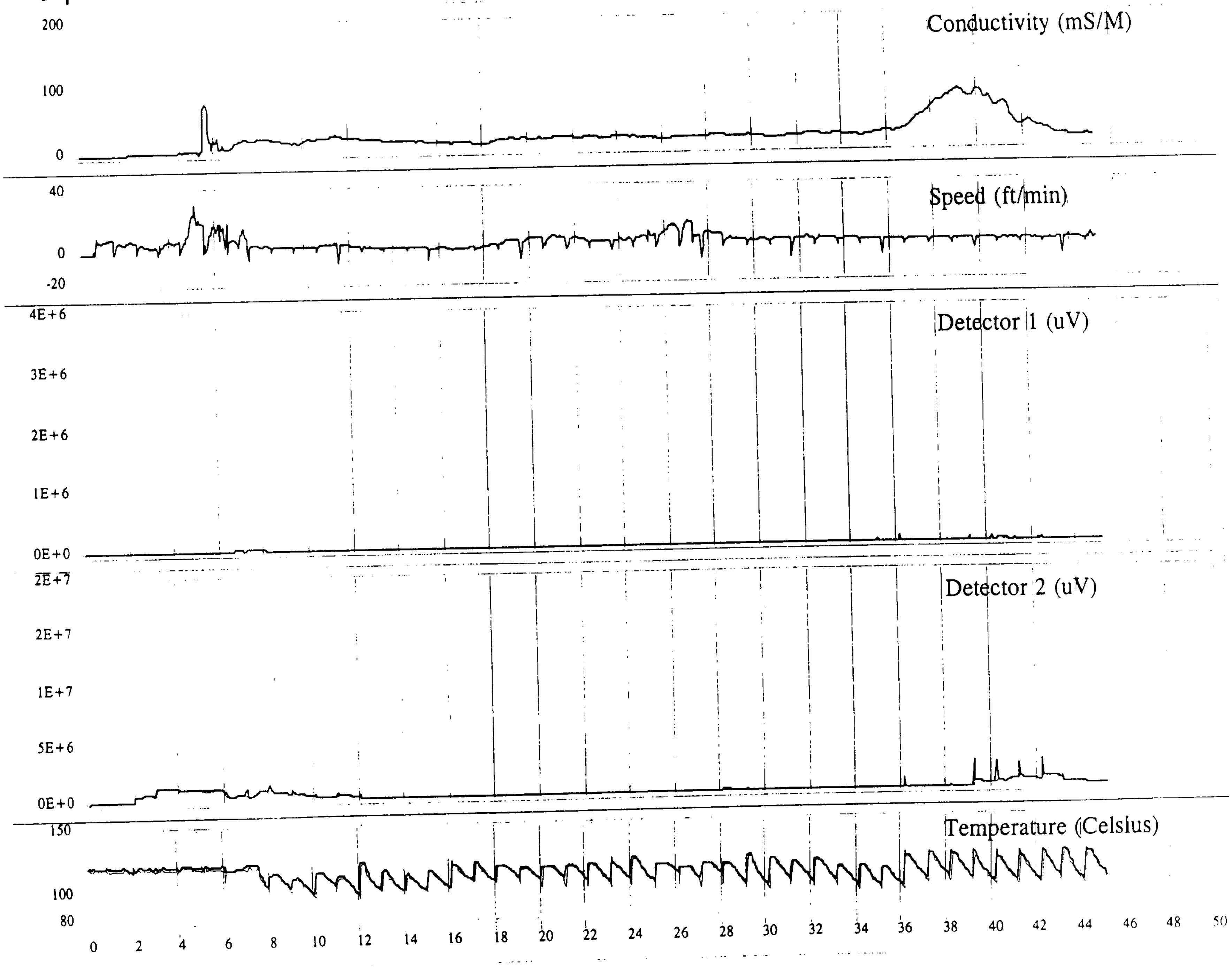
Log: \dirim95\LOGFILES\Sp-16.dat



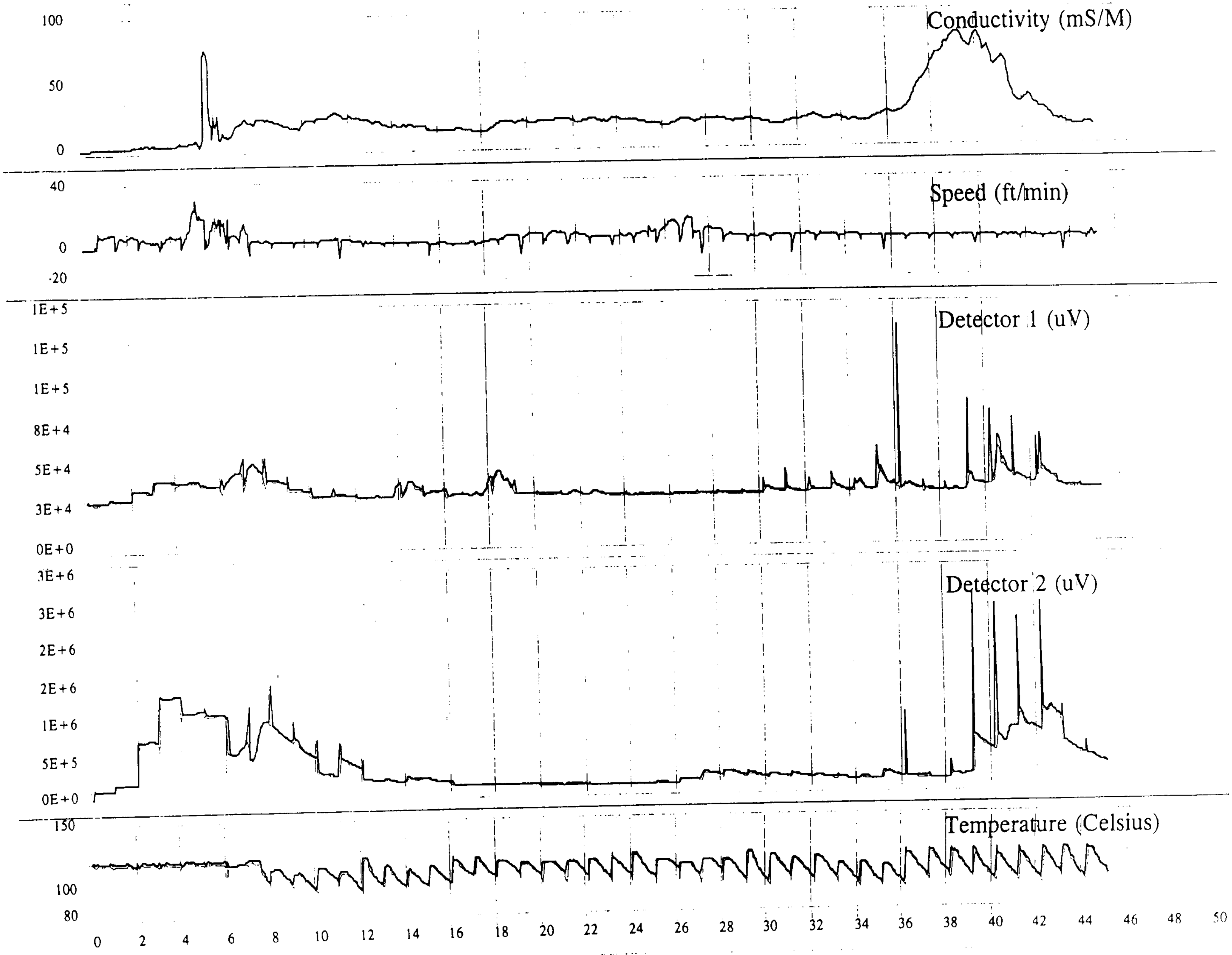
Log: C:\dirim95\LOGFILES\Sp-16.dat



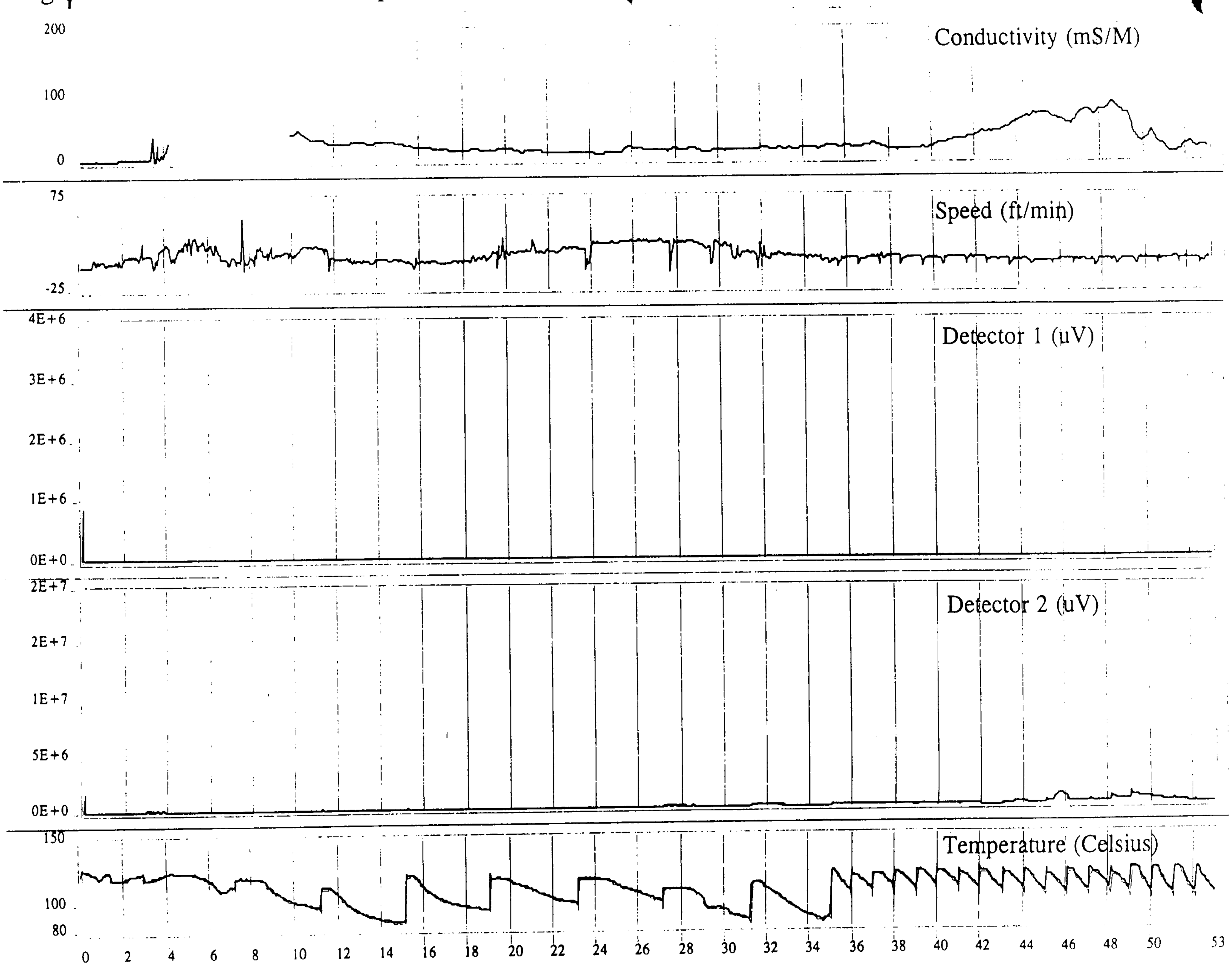
Log: .dirim95\LOGFILES\Sp-19.dat



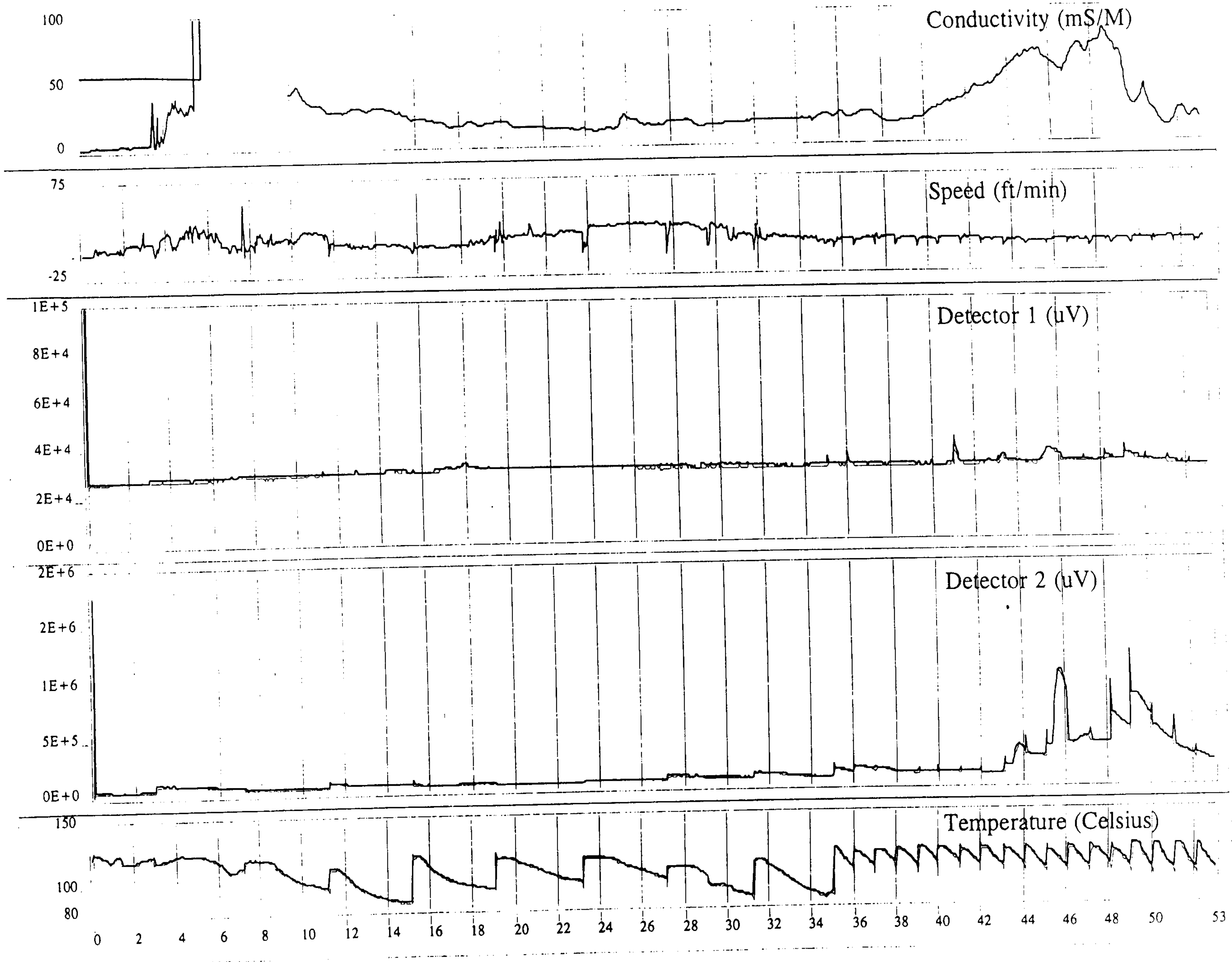
Log: C:\dirim95\LOGFILES\Sp-19.dat



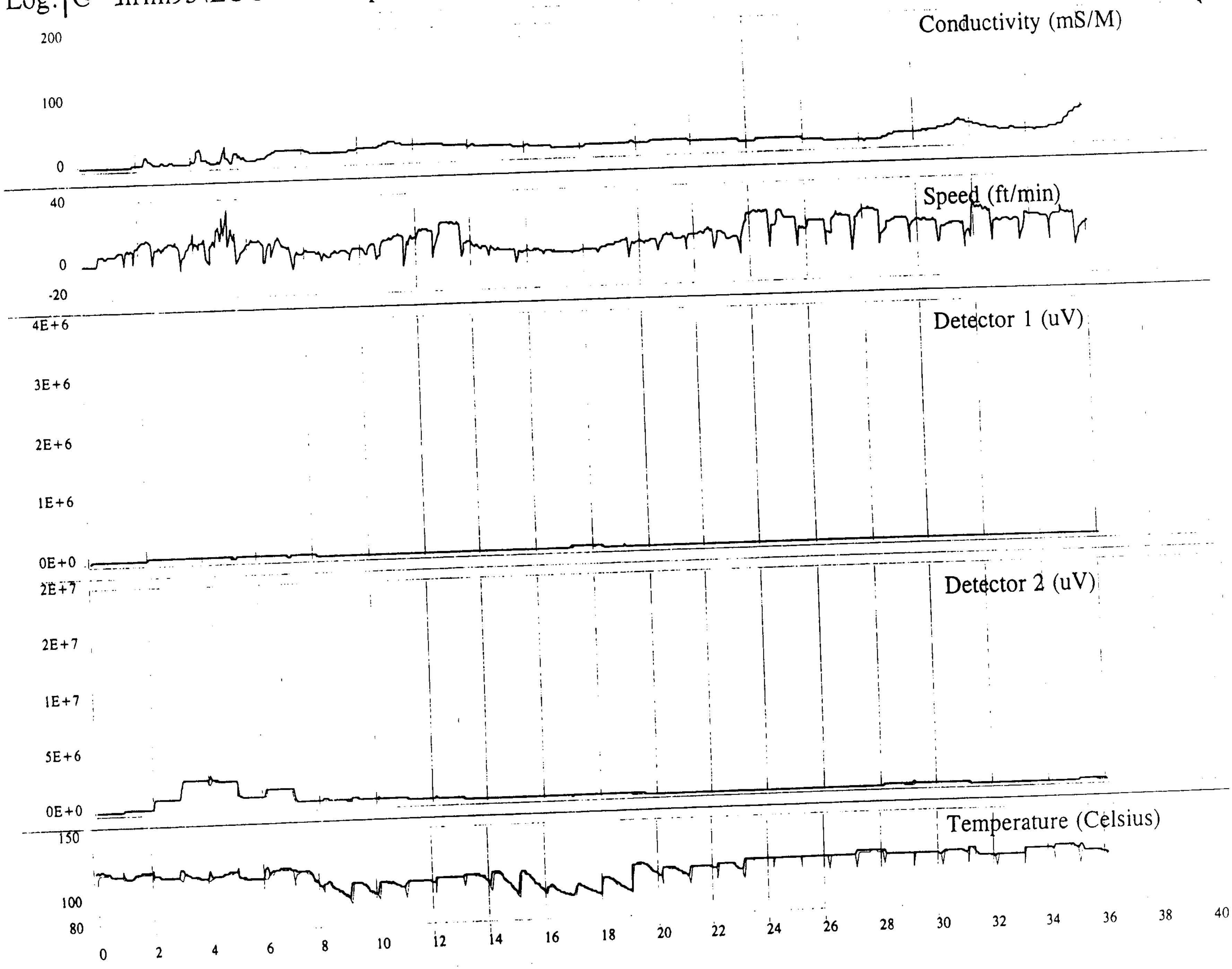
Log: \dirim95\LOGFILES\Sp-21.dat



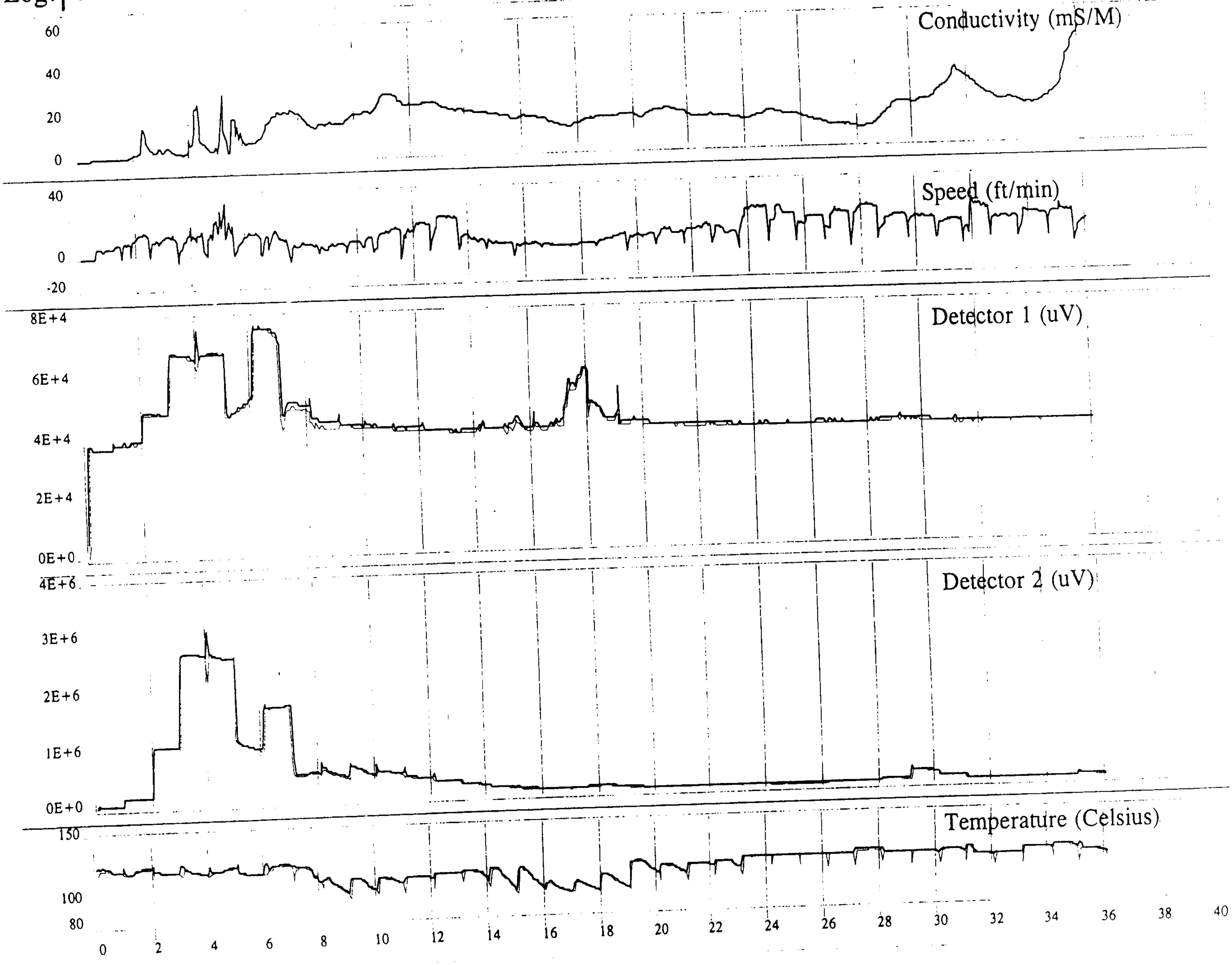
Log: C:\dirim95\LOGFILES\Sp-21.dat



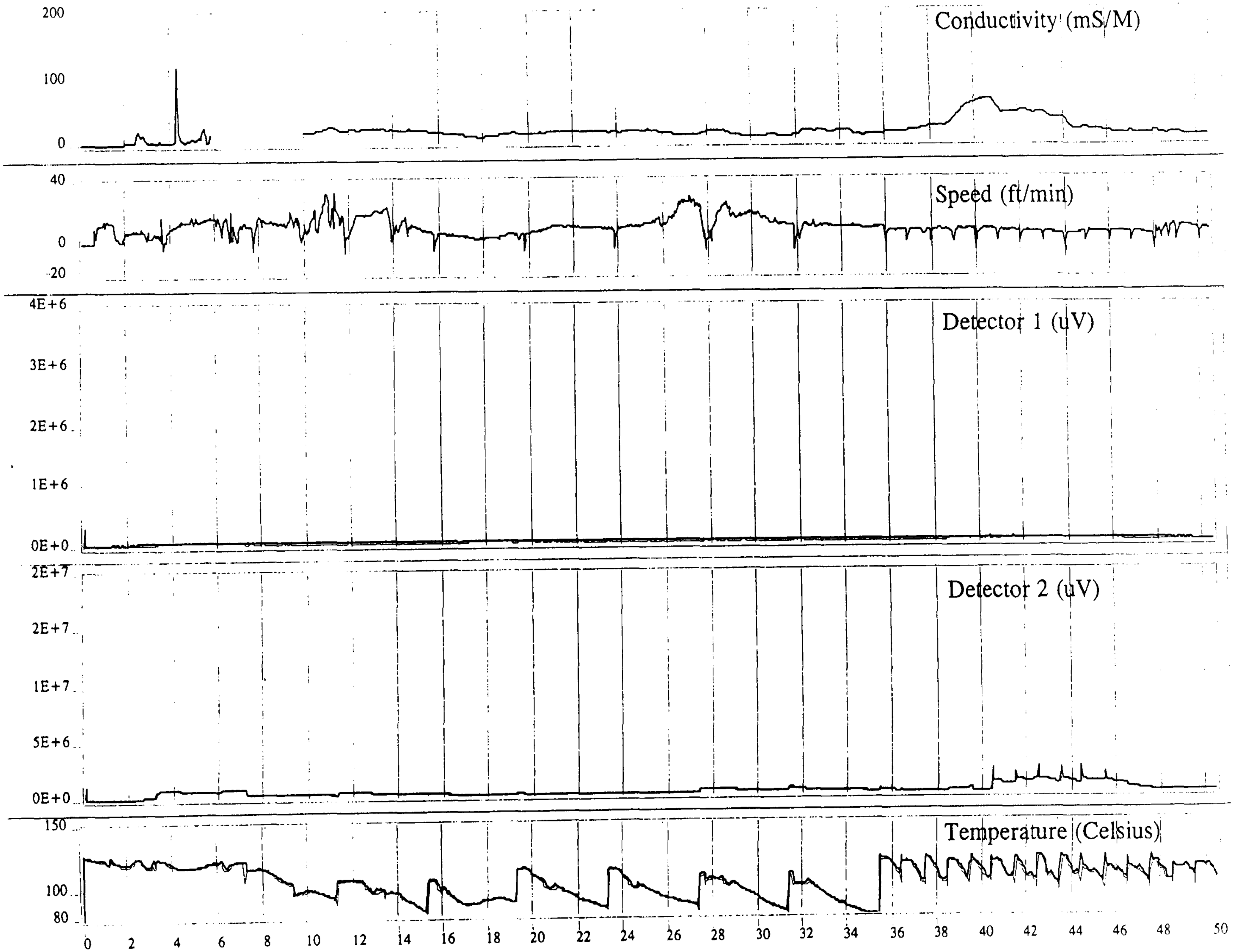
Log: C:\...irim95\LOGFILES\Sp-22.dat



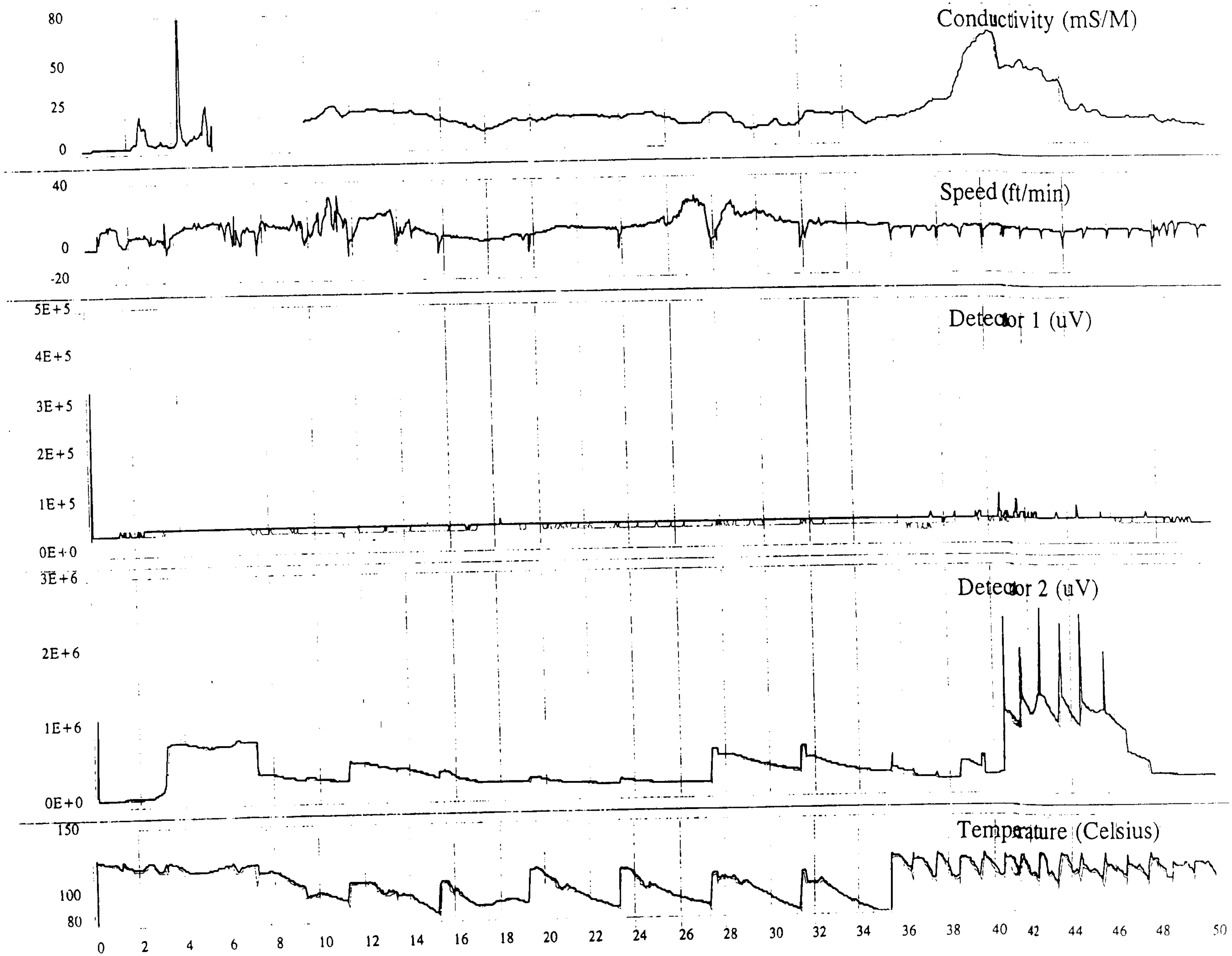
Log: C:\dirim95\LOGFILES\Sp-22.dat



Log: \dirim95\LOGFILES\Sp-22-r.dat



Log: C:\dirim95\LOGFILES\Sp-22-r.dat



January 8 – 12, 2001 Source Area Delineation Effort
Laboratory Analytical Results

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	33U	33U	33U	2.8	3.3U
1,1-Dichloroethane, ug/l	49U	49U	49U	1.0J7	4.9U
1,1-Dichloroethene, ug/l	93U	93U	93U	0.93U	9.3U
cis-1,2-Dichloroethene, ug/l	900	200	77J7	46	4.7U
trans-1,2-Dichloroethene, ug/l	64U	64U	64U	0.64U	6.4U
Ethylbenzene, ug/l	43U	11	43U	26	4.3U
Tetrachloroethene, ug/l	5300	5100	11000	43	1500
Toluene, ug/l	51U	1.6	51U	0.6J7	5.1U
1,1,1-Trichloroethane, ug/l	46U	46U	46U	0.46U	4.6U
1,1,2-Trichloroethane, ug/l	67U	67U	67U	0.67U	6.7U
Trichloroethene, ug/l	430	31U	31U	0.5J7	11
Vinyl chloride, ug/l	39U	39U	39U	3.7	3.9U
Xylenes, Total, ug/l	38U	0.4J7	38U	0.38U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %	103 %	103 %	102 %	103 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	98 %	100 %	103 %	103 %	103 %
Dilution Factor	100	1,100	100	1	10

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Prep Time	00:00	00:00	00:00	---	---
Analysis Date	01.15.01	01.16.01	01.16.01	01.17.01	01.16.01
Analysis Time	16:50	15:29	23:52	13:30	17:21
Batch ID	LUW004	LUW005	LUW005	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-6	047-SITE11-DUP1-GW-1102001	01-10-01/08:00
01194-7	047-SITE11-EQ1-192001	01-09-01/14:00
01194-8	047-SITE11-EQ2-192001	01-10-01/08:00

PARAMETER	01194-6	01194-7	01194-8
Aromatic and Halogenated Volatiles (8021)			
Benzene, ug/l	3.3U	0.33U	0.33U
1,1-Dichloroethane, ug/l	4.9U	0.49U	0.49U
1,1-Dichloroethene, ug/l	9.3U	0.93U	0.93U
cis-1,2-Dichloroethene, ug/l	4.7U	0.47U	0.47U
trans-1,2-Dichloroethene, ug/l	6.4U	0.64U	0.64U
Ethylbenzene, ug/l	4.3U	0.43U	0.43U
Tetrachloroethene, ug/l	1400	1.2U	1.2U
Toluene, ug/l	5.1U	0.51U	0.51U
1,1,1-Trichloroethane, ug/l	4.6U	0.46U	0.46U
1,1,2-Trichloroethane, ug/l	6.7U	0.67U	0.67U
Trichloroethene, ug/l	11	0.31U	0.31U
Vinyl chloride, ug/l	3.9U	0.39U	0.39U
Xylenes, Total, ug/l	3.8U	0.38U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	101 %	102 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	103 %	103 %	105 %
Dilution Factor	10	1	1
Analysis Date	01.16.01	01.15.01	01.16.01
Analysis Time	18:17	22:26	19:13
Batch ID	LUW005	LUW004	LUW005
Prep Method	5030	5030	5030
Analyst	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-9	Trip Blank	01-10-01

PARAMETER	01194-9
Aromatic and Halogenated Volatiles (8021)	
Benzene, ug/l	0.33U
1,1-Dichloroethane, ug/l	0.49U
1,1-Dichloroethene, ug/l	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U
Ethylbenzene, ug/l	0.43U
Tetrachloroethene, ug/l	1.2U
Toluene, ug/l	0.51U
1,1,1-Trichloroethane, ug/l	0.46U
1,1,2-Trichloroethane, ug/l	0.67U
Trichloroethene, ug/l	0.31U
Vinyl chloride, ug/l	0.39U
Xylenes, Total, ug/l	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	102 %
Dilution Factor	1
Analysis Date	01.16.01
Analysis Time	22:01
Batch ID	LUW005
Prep Method	5030
Analyst	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-10	Method Blank	
01194-11	Lab Control Standard True Value	
01194-12	Lab Control Standard Result	
01194-13	Lab Control Standard % Recovery	
01194-14	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-10	01194-11	01194-12	01194-13	01194-14
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	47	94 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	41	82 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	46	92 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	42	84 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	49	98 %	71-120
Ethylbenzene, ug/l	0.43U	50	48	96 %	72-145
Tetrachloroethene, ug/l	1.2U	50	44	88 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	41	82 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	38	76 %	61-136
Trichloroethene, ug/l	0.31U	50	45	90 %	74-122
Vinyl chloride, ug/l	0.5J7	50	40	80 %	4-126
Xylenes, Total, ug/l	0.38U	150	140	93 %	76-128
Surrogate - 4-Bromofluorobenzene (PID), ug/l	96 %	50	48.2	96 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	95 %	50	43.5	87 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	12:41	13:37	13:37	13:37	13:37
Batch ID	LUW004	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-15	Matrix Spike True Value	
01194-16	Matrix Spike Result	
01194-17	Matrix Spike % Recovery	
01194-18	MSD True Value	
01194-19	Matrix Spike Duplicate Result	

PARAMETER	01194-15	01194-16	01194-17	01194-18	01194-19
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	5000	5336	107 %	5000	5406
1,1-Dichloroethane, ug/l	5000	4728	95 %	5000	4605
1,1-Dichloroethene, ug/l	5000	5690	114 %	5000	5540
cis-1,2-Dichloroethene, ug/l	5000	5517	92 %	5000	5625
trans-1,2-Dichloroethene, ug/l	5000	5671	113 %	5000	5720
Ethylbenzene, ug/l	5000	5454	109 %	5000	5557
Tetrachloroethene, ug/l	5000	8859	72 %	5000	8762
Toluene, ug/l	5000	5311	106 %	5000	5407
1,1,1-Trichloroethane, ug/l	5000	5026	101 %	5000	4690
1,1,2-Trichloroethane, ug/l	5000	4172	83 %	5000	3981
Trichloroethene, ug/l	5000	5615	104 %	5000	5668
Vinyl chloride, ug/l	5000	4913	98 %	5000	4784
Xylenes, Total, ug/l	15000	15803	105 %	15000	16121
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	48.5	97 %	50	48.6
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	46.2	92 %	50	43.7
Dilution Factor	100	100	100	100	1

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-15	Matrix Spike True Value	
01194-16	Matrix Spike Result	
01194-17	Matrix Spike % Recovery	
01194-18	MSD True Value	
01194-19	Matrix Spike Duplicate Result	

PARAMETER	01194-15	01194-16	01194-17	01194-18	01194-19
Prep Time	00:00	---	---	---	---
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	17:46	---	---	---	00:00
Batch ID	LUW004	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-20	Matrix Spike Duplicate % Recovery	
01194-21	MS Accuracy Advisory Limit (%R)	
01194-22	Precision (%RPD) MS/MSD	
01194-23	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-20	01194-21	01194-22	01194-23
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	108 %	79-126	1	12
1,1-Dichloroethane, ug/l	92 %	68-141	3	24
1,1-Dichloroethene, ug/l	111 %	48-151	3	30
cis-1,2-Dichloroethene, ug/l	94 %	76-121	2	10
trans-1,2-Dichloroethene, ug/l	114 %	69-128	1	13
Ethylbenzene, ug/l	111 %	76-138	2	11
Tetrachloroethene, ug/l	70 %	59-147	3	31
Toluene, ug/l	108 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	94 %	49-139	7	26
1,1,2-Trichloroethane, ug/l	80 %	71-137	5	26
Trichloroethene, ug/l	105 %	63-130	1	13
Vinyl chloride, ug/l	96 %	6-135	3	24
Xylenes, Total, ug/l	107 %	72-132	2	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	97 %	70-130	0	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	87 %	70-130	6	21
Dilution Factor	100	100	100	100
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	---	---	00:00	---
Batch ID	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-24	Method Blank	
01194-25	Lab Control Standard True Value	
01194-26	Lab Control Standard Result	
01194-27	Lab Control Standard % Recovery	
01194-28	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-24	01194-25	01194-26	01194-27	01194-28
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	48	96 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	44	88 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	46	92 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	43	86 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	49	98 %	71-120
Ethylbenzene, ug/l	0.43U	50	48	96 %	72-145
Tetrachloroethene, ug/l	1.2U	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	45	90 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	43	86 %	61-136
Trichloroethene, ug/l	0.31U	50	46	92 %	74-122
Vinyl chloride, ug/l	0.39U	50	43	86 %	4-126
Xylenes, Total, ug/l	0.38U	150	142	95 %	76-128
Surrogate - 4-Bromofluorobenzene (PID), ug/l	97 %	50	49.3	99 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	50	49.2	98 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW005	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-29	Matrix Spike True Value	
01194-30	Matrix Spike Result	
01194-31	Matrix Spike % Recovery	
01194-32	MSD True Value	
01194-33	Matrix Spike Duplicate Result	

PARAMETER	01194-29	01194-30	01194-31	01194-32	01194-33
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	58	107 %	50	57
1,1-Dichloroethane, ug/l	50	53	97 %	50	52
1,1-Dichloroethene, ug/l	50	58	116 %	50	59
cis-1,2-Dichloroethene, ug/l	50	64	77 %	50	65
trans-1,2-Dichloroethene, ug/l	50	59	117 %	50	59
Ethylbenzene, ug/l	50	64	109 %	50	65
Tetrachloroethene, ug/l	50	143	139 %	50	140
Toluene, ug/l	50	54	107 %	50	55
1,1,1-Trichloroethane, ug/l	50	54	108 %	50	52
1,1,2-Trichloroethane, ug/l	50	44	88 %	50	42
Trichloroethene, ug/l	50	55	108 %	50	55
Vinyl chloride, ug/l	50	48	91 %	50	48
Xylenes, Total, ug/l	150	162	108 %	150	165
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	50.1	100 %	50	48.8
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.6	97 %	50	45.3
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW055	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-34	Matrix Spike Duplicate % Recovery	
01194-35	MS Accuracy Advisory Limit (%R)	
01194-36	Precision (%RPD) MS/MSD	
01194-37	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-34	01194-35	01194-36	01194-37
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	110 %	79-126	2	12
1,1-Dichloroethane, ug/l	95 %	68-141	2	24
1,1-Dichloroethene, ug/l	117 %	51-156	2	19
cis-1,2-Dichloroethene, ug/l	78 %	76-121	1	10
trans-1,2-Dichloroethene, ug/l	119 %	69-128	2	13
Ethylbenzene, ug/l	110 %	76-138	2	11
Tetrachloroethene, ug/l	133 %	59-147	4	31
Toluene, ug/l	110 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	105 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	84 %	71-137	5	26
Trichloroethene, ug/l	109 %	73-129	2	13
Vinyl chloride, ug/l	92 %	6-135	0	24
Xylenes, Total, ug/l	110 %	72-132	2	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	98 %	70-130	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	91 %	70-130	6	21
Dilution Factor	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-38	Method Blank	
01194-39	Lab Control Standard True Value	
01194-40	Lab Control Standard Result	
01194-41	Lab Control Standard % Recovery	
01194-42	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-38	01194-39	01194-40	01194-41	01194-42
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	45	90 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	41	82 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	47	94 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	40	80 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.43U	50	47	94 %	72-145
Tetrachloroethene, ug/l	2.1F	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	45	90 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	43	86 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	36	72 %	61-136
Trichloroethene, ug/l	0.31U	50	44	88 %	74-122
Vinyl chloride, ug/l	0.39U	50	40	80 %	4-126
Xylenes, Total, ug/l	0.38U	150	137	91 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	101 %	50	48.8	98 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	100 %	50	46.1	92 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-43	Matrix Spike Value	
01194-44	Matrix Spike Result	
01194-45	Matrix Spike % Recovery	
01194-46	MSD True Value	
01194-47	Matrix Spike Duplicate Result	

PARAMETER	01194-43	01194-44	01194-45	01194-46	01194-47
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	50	94 %	50	50
1,1-Dichloroethane, ug/l	50	46	88 %	50	48
1,1-Dichloroethene, ug/l	50	81	161 %M2	50	81
cis-1,2-Dichloroethene, ug/l	50	111	52 %M2	50	110
trans-1,2-Dichloroethene, ug/l	50	52	102 %	50	51
Ethylbenzene, ug/l	50	85	6 %M2	50	84
Tetrachloroethene, ug/l	50	49	95 %	50	48
Toluene, ug/l	50	53	93 %	50	52
1,1,1-Trichloroethane, ug/l	50	47	94 %	50	48
1,1,2-Trichloroethane, ug/l	50	38	76 %	50	40
Trichloroethene, ug/l	50	48	94 %	50	48
Vinyl chloride, ug/l	50	44	80 %	50	44
Xylenes, Total, ug/l	150	230	56 %M2	150	227
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	47.3	95 %	50	47.7
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	46.0	92 %	50	47.6
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006	LUS006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-48	Matrix Spike Duplicate % Recovery	
01194-49	MS Accuracy Advisory Limit (%R)	
01194-50	Precision (%RPD) MS/MSD	
01194-51	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-48	01194-49	01194-50	01194-51
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	94 %	79-126	0	12
1,1-Dichloroethane, ug/l	91 %	68-141	3	24
1,1-Dichloroethene, ug/l	162 %M2	51-156	0	19
cis-1,2-Dichloroethene, ug/l	50 %M2	76-121	5	10
trans-1,2-Dichloroethene, ug/l	101 %M2	69-128	1	13
Ethylbenzene, ug/l	3 %M2	76-138	64M2	11
Tetrachloroethene, ug/l	93 %	59-147	2	31
Toluene, ug/l	93 %	79-125	0	10
1,1,1-Trichloroethane, ug/l	96 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	80 %	71-137	5	26
Trichloroethene, ug/l	94 %	73-129	0	13
Vinyl chloride, ug/l	80 %	6-135	1	24
Xylenes, Total, ug/l	54 %M2	72-132	4	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	95 %	70-130	0	5
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	95 %	70-130	3	3
Dilution Factor	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

Rick Hayes, Project Manager

Final Page Of Report

STL PENSACOLA

STATE CERTIFICATIONS

.abama Department of Environmental Management, Laboratory ID No. 40150 (Drinking Water by Reciprocity with FL)

Arizona Department of Health Services, Lab ID No. AZ0589 (Hazardous Waste & Wastewater)

Arkansas Department of Pollution Control and Ecology, (No Laboratory ID No. assigned by state) (Environmental)

State of California, Department of Health Services, Laboratory ID No. 2338 (Hazardous Waste and Wastewater)

State of Connecticut, Department of Health Services, Connecticut Lab Approval No. PH-0697 (Drinking Water, Hazardous Waste and Wastewater)

Delaware Health & Social Services, Division of Public Health, Laboratory ID No. FL094 (Drinking Water by Reciprocity with FL)

Florida DOH Laboratory ID No. E81010 (Drinking Water, Hazardous Waste and Wastewater)

Florida, Radioactive Materials License No. G0733-1

Foreign Soil Permit, Permit No. S-37599

Kansas Department of Health & Environment, Laboratory ID No. E10253 (Wastewater and Hazardous Waste)

Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Laboratory ID No. 90043 (Drinking Water)

State of Louisiana, DHH, Office of Public Health Division of Laboratories, Laboratory ID No. LA000017 (Drinking Water)

Louisiana Department of Environmental Quality, Environmental Laboratory Accreditation Program, Agency Interest ID 30748 (Environmental - Accreditation Pending)

.te of Maryland, DH&MH Laboratory ID No. 233 (Drinking Water by Reciprocity with Florida)

ommonwealth of Massachusetts, DEP, Laboratory ID No. M-FL094 (Hazardous Waste and Wastewater)

State of Michigan, Bureau of E&OccH, Laboratory ID No.9912 (Drinking Water by Reciprocity with Florida)

New Hampshire DES ELAP, Laboratory ID No. 250599A (Wastewater)

State of New Jersey, Department of Environmental Protection & Energy, Laboratory ID No. 49006 (Wastewate and Hazardous Waster)

New York State, Department of Health, Laboratory ID No. 11503 (Wastewater and Solids/Hazardous Waste)

North Carolina Department of Environment & Natural Resources, Laboratory ID No. 314 (Hazardous Waste and Wastewater)

North Dakota DH&Consol Labs, Laboratory ID No. R-108 (Drinking Water, Wastewater and Hazardous Waste by Reciprocity with Florida)

State of Oklahoma, Oklahoma Department of Environmental Quality, Laboratory ID No. 9810 (Hazardous Waste and Wastewater)

Commonwealth of Pennsylvania, Department of Environmental Resources, Laboratory ID No. 68-467 (Drinking Water)

South Carolina DH&EC, Laboratory ID No. 96026 (Wastewater by Reciprocity with FL and Solids/Hazardous Waste by Reciprocity with CA)

Tennessee Department of Health & Environment, Laboratory ID No. 02907 (Drinking Water)

Virginia Department of General Services, Laboratory ID No. 00008 (Drinking Water by Reciprocity with FL)

State of Washington, Department of Ecology, Laboratory ID No. C282 (Hazardous Waste and Wastewater)

"Vest Virginia Division of Environmental Protection, Office of Water Resources, Laboratory ID No. 136 (Hazardous Waste and Wastewater by :iprocity with FL)

American Industrial Hygiene Association (AIHA) Accredited Laboratory, Laboratory ID No. 100704

SEVERN TRENT SERVICES

Data Qualifiers for Final Report

STL Pensacola

STL-Pensacola Inorganic/Organic

B1	The analyte was detected in the associated method blank (sample itself is flagged even though sample is ND).
B2	The analyte was detected in the sample(s) and in the associated method blank analyzed on the day samples were extruded; however, this analyte was not detected in the blank analyzed with the samples.
B3	The analyte was found in the associated blank as well as in the associated sample(s) (qualifier is applied to the sample, notto the blank).
B4	Sample results were corrected due to contaminants in Fractionation Blank
D	Diluted out (surrogate or spike due to sample dilution)
E	Compound concentration exceeds the upper calibration range of the instrument.
F	The reported value is < STL-Pensacola RL and > the STL-Pensacola MDL; therefore, the quantitation is estimation (The STL-PN RL is at or above lowest calibration standard in the initial calibration curve).
G	Sample and/or duplicate result is at or below 5 X (times) the STL Reporting Limit and the absolute difference between the sample and duplicate result is at or below the STL reporting limit; therefore, the results are "in control".
H1	Sample and/or duplicate is below 5 X (times) the STL Reporting Limit and the absolute difference between the results exceeds the STL Reporting Limit; therefore, the results are "out of control"
H2	Sample and duplicate (or MS and MSD) RPD is above control limit.
J (description)	The analyte was positively identified, the quantitation may be an estimation
J4	(For positive results)Temperature limits exceeded ($\leq$2°C or $\geq$ 6°C), non-reportable for NDPES compliance monitoring.
J6	(For positive results) LCS or Surrogate %R is > upper control limit (UCL), results may be biased high
J7	The reported value is > the laboratory MDL and < lowest calibration standard; therefore, the quantitation is an estimation (this qualifier should only be used when the STL-PN RL is below the lowest calibration standard in the initial calibration).
J8	Matrix spike and post spike recoveries are outside control limits. See out of Control Events/Corrective Action Form.
J9	(For positive results) LCS or Surrogate %R is < lower control limit (LCL), results may be biased low
M1	A matrix effect was present ([1]sample, MS or MSD was analyzed twice to confirm surrogate/spike failure, [2]sample and/or MS/MSD chromatogram(s) had interfering peaks, [3]sample result was > 4 X spike added, [4]metals serial dilution was performed, or [5]metals post spike is < 40% R)
2	The MS and/or MSD %R or RPD was outside upper or lower control limits; not necessarily due to matrix effect.
N/C	Not Calculable; Sample spiked is > 4X spike concentration (may also use this flag in place of negative numbers)
NH	Sample and duplicate results are "out of control". The sample is nonhomogeneous.
NoMS	Not enough sample provided to prepare and/or analyze a method-required matrix spike (MS) and/or duplicate (MSD)
Q	The analytical (post digestion) spike is reported due to the percent recovery being outside limits on the matrix (pre-digestion) spike.
R (description)	The data may be unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
R1	(For nondetects) Temperature limits exceeded ($\leq$2°C or $\geq$ 6°C); non-reportable for NDPES compliance monitoring
R2	Improper preservation, no preservative present or insufficient amounts of preservative in sample upon receipt, non-reportable for NDPES compliance monitoring
R3	Improper preservation, incorrect preservative present in sample upon receipt, non-reportable for NPDES compliance
R4	Holding time exceeded, non-reportable for NDPES compliance monitoring.
R5	Collection requirements not met, improper container used for sample
R6	LCS or surrogate %R is < LCL and analyte is not detected or surrogate %R is < 10% for detects/nondetects.
R7	Internal standard area outside –50% to +100% of calibration verification standard.
R8	Initial calibration or any calibration verification exceeds acceptance criteria.
R9	Not filtered and preserved at time of collection.
R10	Headspace >1/4" in diameter in volatile vials, non-reportable for NPDES compliance monitoring
R11	Samples were filtered and preserved within 4 hours of collection.
R12	Analysis performed outside the 12-hour tune or not within tune criteria.
S1	The Method of Standard Additions (MSA) has been performed on this sample.
S2	Incorrect sample amount was submitted to the laboratory for analysis
S3 (Flashpoint)	This method is not designed for solids and the results may not be accepted by any regulator for such purposes.
T	Second-column or detector confirmation exceeded the SW-846 criteria of 40% RPD for this compound.
TIC	The compound is not within the initial calibration curve. It is searched for qualitatively or as a Tentatively Identified Compound.
U	The reported value is $\leq$ Laboratory MDL (value for result will be the MDL, never below the MDL)
W	Post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is less than 50% spike absorbance.
@	Adjusted reporting limit due to sample composition, not due to overcal (dilution prior to digestion and/or analysis).
#	Elevated reporting limit due to insufficient sample size
1 pt	The compound has been quantitated against a one point calibration.
(Metals & Wet Chem)	Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)

STL Pensacola

PROJECT SAMPLE INSPECTION FORM

SEVERN TRENT SERVICES

Lab Order #: C101194 Date Received: 1/11/01

1.	Was there a Chain of Custody?	Yes	No♣	
2.	Was Chain of Custody properly filled out and relinquished?	Yes	No♣	
3.	Were samples received cold? (Criteria: 2° - 6°C: STL-SOP	Yes	No♣	N/A
4.	Were all samples properly labeled and identified?	Yes	No♣	
5.	Did samples require splitting or compositing♦? Req By: PM Client Other♦	Yes♣	No	
6.	Were samples received in proper containers for analysis requested?	Yes	No♣	
7.	Were all sample containers received intact?	Yes	No♣	
8.	Were samples checked for preservative? *(Check pH of all H_2O requiring preservative (STL-PN SOP 917) except VOA vials that require zero headspace)*+	Yes	No♣	N/A
9.	Is there sufficient volume for analysis requested?	Yes	No♣	N/A *(Can)*
10.	Were samples received within Holding Time? (REFER TO STL-SOP 1040)	Yes	No♣	
11.	Is Headspace visible > ¼" in diameter in VOA vials?* If any headspace is evident, comment in out-of-control section.	Yes♣	No	N/A
12.	If sent, were matrix spike bottles returned?	Yes	No♣	N/A
13.	Was Project Manager notified of problems? (initials:_______)	Yes	No♣	N/A

Airbill Number(s): 8225 0085 4686

Shipped By: FedEx

Cooler Number(s): 691 M

Shipping Charges: N/A

Cooler Weight(s): 30#

Cooler Temp(s) (°C): 3°C

CCU3

(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

Out of Control Events and Inspection Comments:

(USE BACK OF PSIFFOR ADDITIONAL NOTES AND COMMENTS)

Inspected By: MHS **Date:** 1/11/01 **Logged By:** [illegible] **Date:** 1/11/01

♣ *Note all Out-of-Control and/or questionable events on Comment Section of this form. For holding times, the analyticl department will flag immediate hold time samples(pH, Dissolved O_2, Residual CL) as out of hold time, therefore, these samples will not be documented on this PSIF.*

♦ *If Other, note who requested the splitting or compositing of samples on the Comment Section of this form. All volatile samples requested to be split or composited must be done in the Volatile Lab. Document: "Volatile sample values may be compromised due to sample splitting (compositing)"*

\+ *All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (STL-SOP 938, section 2.2.9).*

* *According to EPA, ¼" of headspace is allowed in 40 ml vials requiring volatile analysis, however, STL makes it policy to record any headspace as out-of-control (STL-SOP 938, section 2.2.12).*

WORD\ELKINS\SAMPCTRL\PSIF.DOC November 29, 2000

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001- • Fax (850) 474-4789
...itted To *Your* Success

CHAIN OF CUSTODY

LAB ACCESSION # C101194

...T 1 - Bottle Shipment Information

CLIENT: CCI/JAJONES **CLIENT PROJECT NUMBER:** 047

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE: H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	PLASTIC CONTAINERS: 8 oz.	16 oz	32 oz	½ gallon	1 gallon	Whirl-pak	100-ML Cup	GLASS CONTAINERS: 120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	NOTES
16			X															X						
2																		X					X	

Relinquished By:	Time	Date	Received By:	Time	Date
~~Scott A Sloan~~	~~1300~~	~~1/10/01~~			

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RLH C101C441	8021B		TOTAL # OF BOTTLES
047-Site11-SP34-36-GW-192001	1/9/01	0800	GW	X	X	1	2
...-Site11-SP34-40-GW-192001	1/9/01	0915	GW	X	X	2	2
...11-SP34-44-GW-192001	1/9/01	1320	GW	X	X	3	2
...Site11-SP34-48-GW-192001	1/9/01	1445	GW	X	X	4	2
047Site11-EQ1-192001	1/9/01	~~0800~~ 1400		X	X	7 5	2
047-Site11-SP41-36-GW-1102001	1/10/01	0800	GW	X	X	5 6	2
047Site11 EQ2-192001	1/10/01	0800		X	X	8 7	2
047-Site11-Dup1-GW-1102001	1/10/01	0800	GW	X	X	6 8	2
TRIP Blank				X	X	9 9	2
Temp Blank						NC	1

Total Number of Bottles/Containers: 19

Relinquished By	Date	Time	Received By	Date	Time
Scott A Sloan	1300	1/10/01	Mark Swafford	1/11/01	0902

Client CCI/JAJONES			Purchase Order Number
Address 6219 Authority Ave			Project Number CTO-047
City Jacksonville FL	State FL	Zip 32221	Project Name SITE 11 KINGS BAY
Phone Number (904) 777-4812	Fax Number (904) 777-4262		Project Location KINGS BAY SUB-BASE
Project Manager MIKE HALIL			Sampled By SCOTT A SLOAN

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
48 hours - 2x standard price		
3-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed ______

FORM # 12694 WHITE — LAB CANARY — REPORT PINK — CLIENT

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-1	047-SITE11-EQ3-1112001	01-11-01/13:00
01267-2	047-SITE11-SP41-40-GW-1112001	01-11-01/12:00
01267-3	047-SITE11-SP41-44-GW-1112001	01-11-01/13:00
01267-4	047-SITE11-SP41-48-GW-1112001	01-11-01/14:00
01267-5	047-SITE11-SP40-36-GW-1112001	01-11-01/12:05

PARAMETER	01267-1	01267-2	01267-3	01267-4	01267-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.334	1.8	3.7J7	3.3U	3.3U
1,1-Dichloroethane, ug/l	0.49U	4.4	4.9U	4.9U	4.9U
1,1-Dichloroethene, ug/l	0.93U	0.93U	9.3U	9.3U	9.3U
cis-1,2-Dichloroethene, ug/l	0.47U	26	4.7U	4.7U	4.7U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	6.4U	6.4U	6.4U
Ethylbenzene, ug/l	0.43U	9.6	0.72J7	4.3U	4.3U
Tetrachloroethene, ug/l	1.2U	73	1500	1200	200
Toluene, ug/l	0.51U	0.58J7	5.1U	5.1U	5.1U
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	4.6U	4.6U	4.6U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	6.7U	6.7U	6.7U
Trichloroethene, ug/l	0.31U	0.76J7	16	13	3.1U
Vinyl chloride, ug/l	0.39U	2.7	3.9U	3.9U	3.9U
Xylenes, Total, ug/l	0.38U	0.40J7	0.38U	3.8U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	103 %	102 %	104 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	105 %	101 %	103 %	102 %	104 %
Dilution Factor	1	1	1,10	10	10
Analysis Date	01.16.01	01.16.01	01.17.01	01.17.01	11.07.01
Analysis Time	22:56	12:27	17:07	18:03	01:44
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-6	047-SITE11-SP40-40-GW-1112001	01-11-01/12:45
01267-7	047-SITE11-SP40-44-GW-1112001	01-11-01/13:30
01267-8	047-SITE11-SP40-48-GW-1112001	01-11-01/14:15
01267-9	047-SITE11-DUP2-GW-1112001	01-12-01
01267-10	047-SITE11-EQ4-1112001	01-12-01/12:00

PARAMETER	01267-6	01267-7	01267-8	01267-9	01267-10
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	2.0	2.0	2.6	3.3U	0.52J7
1,1-Dichloroethane, ug/l	0.49U	4.7	2.0	4.9U	0.49U
1,1-Dichloroethene, ug/l	0.93U	0.93U	0.93U	9.3U	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U	71	85	24	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	0.73J7	6.4U	0.64U
Ethylbenzene, ug/l	0.43U	12	83	4.3U	0.43U
Tetrachloroethene, ug/l	11	2.8F	1.6F	1400	1.3F
Toluene, ug/l	0.83J7	0.51U	5.8	5.1U	1.0F
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	0.46U	4.6U	0.46U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	0.67U	6.7U	0.67U
Trichloroethene, ug/l	0.31U	0.31U	1.3	8.0J7	0.31U
Vinyl chloride, ug/l	0.39U	3.4	3.6	3.9U	0.39U
Xylenes, Total, ug/l	0.38U	0.38U	150	3.8U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	101 %	102 %	101 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	104 %	103 %	102 %	103 %
Dilution Factor	1	1	1	10	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.18.01	01.18.01
Analysis Time	02:40	03:36	18:59	06:10	07:06
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-11	047-SITE11-SP38-36-GW-1112001	01-12-01/07:35
01267-12	047-SITE11-SP38-40-GW-1112001	01-12-01/08:30
01267-13	047-SITE11-SP38-44-GW-1112001	01-12-01/09:30
01267-14	047-SITE11-SP38-48-GW-1112001	01-12-01/10:10
01267-15	047-SITE11-SP35-36-GW-1112001	01-12-01/07:40

PARAMETER	01267-11	01267-12	01267-13	01267-14	01267-15
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	1.4	0.83J7	33U	33U	0.33U
1,1-Dichloroethane, ug/l	0.49U	0.49U	49U	49U	0.49U
1,1-Dichloroethene, ug/l	0.93U	0.93U	93U	93U	0.93U
cis-1,2-Dichloroethene, ug/l	6.5	2.9	47U	47U	62
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	64U	64U	8.4
Ethylbenzene, ug/l	0.43U	0.43U	43U	43U	0.43U
Tetrachloroethene, ug/l	130	90	15000	5100	56
Toluene, ug/l	0.51U	1.0F	51U	51U	0.51U
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	46U	46U	0.46U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	67U	67U	0.67U
Trichloroethene, ug/l	7.0	1.8	31U	31U	22
Vinyl chloride, ug/l	0.39U	0.39U	39U	39U	53
Xylenes, Total, ug/l	0.38U	0.38U	38U	38U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %	99 %	102 %	102 %	102 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	99 %	101 %	103 %	106 %	102 %
Dilution Factor	1	1	100	100	1
Analysis Date	01.17.01	01.19.01	01.18.01	01.18.01	01.18.01
Analysis Time	06:24	13:42	20:44	21:40	02:26
Batch ID	LUW005	LUW008	LUW007	LUW007	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-16	047-SITE11-SP35-40-GW-1112001	01-12-01/09:10
01267-17	047-SITE11-SP35-44-GW-1112001	01-12-01/09:35
01267-18	047-SITE11-SP35-48-GW-1112001	01-12-01/10:10
01267-19	047-SITE11-SP36-36-GW-1112001	01-12-01/11:00
01267-20	047-SITE11-SP36-40-GW-1112001	01-12-01/11:30

PARAMETER	01267-16	01267-17	01267-18	01267-19	01267-20
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	3.7	11U	3.3U	3.1	3.3U
1,1-Dichloroethane, ug/l	4.9U	9.5U	4.9U	0.49U	4.9U
1,1-Dichloroethene, ug/l	9.3U	17U	9.3U	0.93U	9.3U
cis-1,2-Dichloroethene, ug/l	37	150	0.47U	0.47U	24
trans-1,2-Dichloroethene, ug/l	6.4U	12U	0.64U	0.64U	6.4U
Ethylbenzene, ug/l	2.2	20U	11	0.43U	8.3J7
Tetrachloroethene, ug/l	1300	22000	460	90	1700
Toluene, ug/l	5.1U	11U	5.1U	0.54J7	5.1U
1,1,1-Trichloroethane, ug/l	4.6U	16U	4.6U	0.46U	4.6U
1,1,2-Trichloroethane, ug/l	6.7U	18U	6.7U	0.67U	6.7U
Trichloroethene, ug/l	33	55	25	0.38J7	10
Vinyl chloride, ug/l	3.9U	24U	3.9U	0.39U	3.9U
Xylenes, Total, ug/l	0.38U	16U	3.8U	0.38U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	116 %	105 %	102 %	100 %	117 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	102 %	100 %	102 %	116 %
Dilution Factor	1,10	50	10	1	10
Analysis Date	01.18.01	01.18.01	01.19.01	01.19.01	01.19.01
Analysis Time	17:01	16:41	01:24	02:20	17:23
Batch ID	LUW007	PHW009	LUW007	LUW007	LUW008
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	CP	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-21	047-SITE11-SP36-44-GW-1112001	01-12-01/13:15
01267-22	047-SITE11-SP36-48-GW-1112001	01-12-01/12:40
01267-23	047-SITE11-SP37-36-GW-1112001	01-12-01/11:00
01267-24	047-SITE11-SP37-40-GW-1112001	01-12-01/11:50
01267-25	047-SITE11-SP37-44-GW-1112001	01-12-01/12:30

PARAMETER	01267-21	01267-22	01267-23	01267-24	01267-25
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	3.0	6.1	0.89J7	2.2	1.5
1,1-Dichloroethane, ug/l	22	0.36J7	0.56J7	23	0.19U
1,1-Dichloroethene, ug/l	0.33U	0.33U	0.33U	0.33U	0.33U
cis-1,2-Dichloroethene, ug/l	340	14	0.58J7	180	17
trans-1,2-Dichloroethene, ug/l	1.8	0.23U	0.23U	0.60J7	0.23U
Ethylbenzene, ug/l	21	13	3.9	12	12
Tetrachloroethene, ug/l	14	0.42J7	6.0	3.5	3.7
Toluene, ug/l	2.4F	0.53J7	0.22J7	1.5F	0.67J7
1,1,1-Trichloroethane, ug/l	0.31U	0.31U	0.31U	0.31U	0.31U
1,1,2-Trichloroethane, ug/l	0.96J7	0.36U	0.36U	0.52J7	0.36U
Trichloroethene, ug/l	1.1	0.22U	0.22U	0.47J7	0.22U
Vinyl chloride, ug/l	5.2	2.9	1.2	5.1	1.3
Xylenes, Total, ug/l	2.0J7	0.43J7	0.31U	0.91J7	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	104 %	108 %	106 %	105 %	108 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	108 %	104 %	97 %	108 %
Dilution Factor	1,10	1	1	1	1
Analysis Date	01.18.01	01.18.01	01.18.01	01.19.01	01.19.01
Analysis Time	20:01	21:08	22:14	01:34	18:46
Batch ID	PHW007	PHW009	PHW009	PHW009	PHW010
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-26	047-SITE11-SP37-48-GW-1112001	01-12-01/13:00
01267-27	047-SITE11-SP42-36-GW-1112001	01-12-01/13:00
01267-28	047-SITE11-SP42-40-GW-1112001	01-12-01/13:30
01267-29	047-SITE11-SP42-44-GW-1112001	01-12-01/14:00
01267-30	047-SITE11-SP42-48-GW-1112001	01-12-01/14:45

PARAMETER	01267-26	01267-27	01267-28	01267-29	01267-30
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	4.0	0.21U	2.1U	2.3	1.6
1,1-Dichloroethane, ug/l	0.34J7	0.19U	1.9U	4.1	1.4
1,1-Dichloroethene, ug/l	0.33U	0.33U	3.3U	0.93U	0.93U
cis-1,2-Dichloroethene, ug/l	11	0.33J7	1.4U	62	69
trans-1,2-Dichloroethene, ug/l	0.23U	0.23U	2.3U	0.64U8	0.64U
Ethylbenzene, ug/l	13	0.39U	4.2J7	56	85
Tetrachloroethene, ug/l	3.8	0.51J7	2400	3.4	1.2U
Toluene, ug/l	0.55J7	0.22J7	2.4J7	0.52J7	2.3F
1,1,1-Trichloroethane, ug/l	0.31U	0.31U	3.1U	0.46U	0.46U
1,1,2-Trichloroethane, ug/l	0.36U	1.5F	3.6U	0.67U	0.67U
Trichloroethene, ug/l	0.31J7	0.22U	14	0.44J7	0.81J7
Vinyl chloride, ug/l	3.2	0.48U	4.8U	2.8	2.5
Xylenes, Total, ug/l	0.46J7	0.53J7	4.7J7	0.38U	180
Surrogate - 4-Bromofluorobenzene (PID), ug/l	104 %	104 %	108 %	102 %	79 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	106 %	101 %	107 %	107 %	84 %
Dilution Factor	1	1	10,100	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	19:53	02:07	06:00	04:11	05:07
Batch ID	PHW010	PHW010	PHW009	LUW007	LUW007
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-31	047-SITE11-SP39-36-GW-1112001	01-12-01/13:40
01267-32	047-SITE11-SP39-40-GW-1112001	01-12-01/14:00
01267-33	047-SITE11-SP39-44-GW-1112001	01-12-01/14:35
01267-34	047-SITE11-SP39-48-GW-1112001	01-12-01/15:15

PARAMETER	01267-31	01267-32	01267-33	01267-34
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	3.3U	3.3U	0.85J7	2.1U
1,1-Dichloroethane, ug/l	4.9U	4.9U	3.4	1.9U
1,1-Dichloroethene, ug/l	9.3U	9.3U	0.33U	3.3U
cis-1,2-Dichloroethene, ug/l	4.7U	4.7U	8.5	1.4U
trans-1,2-Dichloroethene, ug/l	6.4U	6.4U	0.23U	2.3U
Ethylbenzene, ug/l	4.3U	4.3U	7.2	6.9J7
Tetrachloroethene, ug/l	1800	2900	190	680
Toluene, ug/l	5.1U	5.1U	0.55J7	2.1U
1,1,1-Trichloroethane, ug/l	4.6U	4.6U	0.31U	3.1U
1,1,2-Trichloroethane, ug/l	6.7U	6.7U	1.2F	3.6U
Trichloroethene, ug/l	4.3J7	5.6J7	0.22U	2.2U
Vinyl chloride, ug/l	3.9U	3.9U	0.55J7	4.8U
Xylenes, Total, ug/l	3.8U	3.8U	0.63J7	3.1U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	101 %	100 %	103 %	105 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	102 %	102 %	98 %	104 %
Dilution Factor	10	10,100	1	10
Analysis Date	01.19.01	01.19.01	01.22.01	01.22.01
Analysis Time	18:19	19:14	14:36	19:03
Batch ID	LUW009	LUW008	PHW011	PHW011
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	CP	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-35	Trip Blank	01-12-01

PARAMETER	01267-35
Aromatic and Halogenated Volatiles (8021)	
Benzene, ug/l	0.33U
1,1-Dichloroethane, ug/l	0.49U
1,1-Dichloroethene, ug/l	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U
Ethylbenzene, ug/l	0.43U
Tetrachloroethene, ug/l	1.2U
Toluene, ug/l	0.51U
1,1,1-Trichloroethane, ug/l	0.46U
1,1,2-Trichloroethane, ug/l	0.67U
Trichloroethene, ug/l	0.31U
Vinyl chloride, ug/l	0.39U
Xylenes, Total, ug/l	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	99 %
Dilution Factor	1
Analysis Date	01.19.01
Analysis Time	23:54
Batch ID	LUW008
Prep Method	5030
Analyst	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-36	Method Blank	
01267-37	Lab Control Standard True Value	
01267-38	Lab Control Standard Result	
01267-39	Lab Control Standard % Recovery	
01267-40	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-36	01267-37	01267-38	01267-39	01267-40
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	48	96 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	44	88 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	46	92 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	43	86 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	49	98 %	71-120
Ethylbenzene, ug/l	0.43U	50	48	96 %	72-145
Tetrachloroethene, ug/l	1.2U	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	45	90 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	43	86 %	61-136
Trichloroethene, ug/l	0.31U	50	46	92 %	74-122
Vinyl chloride, ug/l	0.39U	50	43	86 %	4-126
Xylenes, Total, ug/l	0.38U	150	142	95 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	97 %	50	49.3	99 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	50	49.2	98 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Analysis Time	10:35	11:31	11:31	11:31	11:31
Batch ID	LUS005	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

3355 McLemore Drive • Pensacola, FL 32514 • Tel: 850 474 1001 • Fax: 850 478 2671 • www.stl-inc.com

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-41	Matrix Spike True Value	
01267-42	Matrix Spike Result	
01267-43	Matrix Spike % Recovery	
01267-44	Matrix Spike Duplicate True Value	
01267-45	Matrix Spike Duplicate Result	

PARAMETER	01267-41	01267-42	01267-43	01267-44	01267-45
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	55	107 %	50	57
1,1-Dichloroethane, ug/l	50	53	97 %	50	52
1,1-Dichloroethene, ug/l	50	58	116 %	50	59
cis-1,2-Dichloroethene, ug/l	50	64	77 %	50	65
trans-1,2-Dichloroethene, ug/l	50	59	117 %	50	59
Ethylbenzene, ug/l	50	64	109 %	50	65
Tetrachloroethene, ug/l	50	143	139 %	50	140
Toluene, ug/l	50	54	107 %	50	55
1,1,1-Trichloroethane, ug/l	50	54	108 %	50	52
1,1,2-Trichloroethane, ug/l	50	44	88 %	50	42
Trichloroethene, ug/l	50	55	108 %	50	55
Vinyl chloride, ug/l	50	48	91 %	50	48
Xylenes, Total, ug/l	150	162	107 %	150	165
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	50.1	100 %	50	48.8
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.6	97 %	50	45.3
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Analysis Time	13:23	13:23	13:23	14:19	14:19
Batch ID	LUW005	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

3355 McLemore Drive • Pensacola, FL 32514 • Tel: 850 474 1001 • Fax: 850 478 2671 • www.stl-inc.com
STL Pensacola is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-46	Matrix Spike Duplicate % Recovery	
01267-47	MS Accuracy Advisory Limit (%R)	
01267-48	Precision (%RPD) MS/MSD	
01267-49	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-46	01267-47	01267-48	01267-49
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	110 %	79-126	2	12
1,1-Dichloroethane, ug/l	95 %	68-141	2	24
1,1-Dichloroethene, ug/l	117 %	51-156	2	19
cis-1,2-Dichloroethene, ug/l	78 %	76-121	1	10
trans-1,2-Dichloroethene, ug/l	119 %	69-128	2	13
Ethylbenzene, ug/l	110 %	76-138	2	11
Tetrachloroethene, ug/l	133 %	59-147	4	31
Toluene, ug/l	110 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	105 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	84 %	71-137	5	26
Trichloroethene, ug/l	109 %	73-129	2	13
Vinyl chloride, ug/l	92 %	6-135	0	24
Xylenes, Total, ug/l	109 %	77-135	2	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	98 %	70-130	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	91 %	70-130	6	21
Dilution Factor	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01
Analysis Time	14:19	---	---	00:00
Batch ID	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-50	Method Blank	
01267-51	Lap Control Standard True Value	
01267-52	Lab Control Standard Result	
01267-53	Lab Control Standard % Recovery	
01267-54	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-50	01267-51	01267-52	01267-53	01267-54
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	45	90 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	41	82 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	47	94 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	40	80 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.43U	50	47	94 %	72-145
Tetrachloroethene, ug/l	2.1F	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	45	90 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	43	86 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	36	72 %	61-136
Trichloroethene, ug/l	0.31U	50	44	88 %	74-122
Vinyl chloride, ug/l	0.39U	50	40	80 %	4-126
Xylenes, Total, ug/l	0.38U	150	137	91 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	101 %	50	48.8	98 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	100 %	50	46.1	92 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Analysis Time	11:39	12:34	12:34	12:34	12:34
Batch ID	LUW006	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-55	Matrix Spike True Value	
01267-56	Matrix Spike Result	
01267-57	Matrix Spike % Recovery	
01267-58	Matrix Spike Duplicate True Value	
01267-59	Matrix Spike Duplicate Result	

PARAMETER	01267-55	01267-56	01267-57	01267-58	01267-59
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	50	94 %	50	50
1,1-Dichloroethane, ug/l	50	46	88 %	50	48
1,1-Dichloroethene, ug/l	50	81	161 %M2	50	81
cis-1,2-Dichloroethene, ug/l	50	111	52 %M2	50	110
trans-1,2-Dichloroethene, ug/l	50	52	102 %	50	51
Ethylbenzene, ug/l	50	85	6 %M2	50	84
Tetrachloroethene, ug/l	50	49	95 %	50	48
Toluene, ug/l	50	53	93 %	50	52
1,1,1-Trichloroethane, ug/l	50	47	94 %	50	48
1,1,2-Trichloroethane, ug/l	50	38	76 %	50	40
Trichloroethene, ug/l	50	48	94 %	50	48
Vinyl chloride, ug/l	50	44	80 %	50	44
Xylenes, Total, ug/l	150	230	56 %M2	150	227
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	47.3	95 %	50	47.7
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	46.0	92 %	50	47.6
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Analysis Time	19:55	19:55	19:55	20:51	20:51
Batch ID	LUW006	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-60	Matrix Spike Duplicate % Recovery	
01267-61	MS Accuracy Advisory Limit (%R)	
01267-62	Precision (%RPD) MS/MSD	
01267-63	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-60	01267-61	01267-62	01267-63
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	94 %	79-126	0	12
1,1-Dichloroethane, ug/l	91 %	68-141	3	24
1,1-Dichloroethene, ug/l	162 %M2	51-156	0	19
cis-1,2-Dichloroethene, ug/l	50 %M2	76-121	5	10
trans-1,2-Dichloroethene, ug/l	101 %	69-128	1	13
Ethylbenzene, ug/l	3 %M2	76-138	64M2	11
Tetrachloroethene, ug/l	93 %	59-147	2	31
Toluene, ug/l	93 %	79-125	0	10
1,1,1-Trichloroethane, ug/l	96 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	80 %	71-137	5	26
Trichloroethene, ug/l	94 %	73-129	0	13
Vinyl chloride, ug/l	80 %	6-135	1	24
Xylenes, Total, ug/l	54 %M2	72-132	4	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	95 %	70-130	0	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	95 %	70-130	3	21
Dilution Factor	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01
Analysis Time	20:51	---	---	---
Batch ID	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-64	Method Blank	
01267-65	Lab Control Standard True Value	
01267-66	Lab Control Standard Result	
01267-67	Lab Control Standard % Recovery	
01267-68	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-64	01267-65	01267-66	01267-67	01267-68
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	50	100 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	46	92 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	51	102 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	53	106 %	71-120
Ethylbenzene, ug/l	0.43U	50	52	104 %	72-145
Tetrachloroethene, ug/l	0.96J7	50	50	100 %	65-134
Toluene, ug/l	0.51U	50	50	100 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	48	96 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	39	78 %	61-136
Trichloroethene, ug/l	0.31U	50	49	98 %	74-122
Vinyl chloride, ug/l	0.39U	50	42	84 %	4-126
Xylenes, Total, ug/l	0.38U	150	151	101 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	109 %	50	48.3	97 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	110 %	50	46.0	92 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	11:27	12:23	12:23	12:23	12:23
Batch ID	LUW007	LUW007	LUW007	LUW007	LUW007
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

3355 McLemore Drive • Pensacola, FL 32514 • Tel: 850 474 1001 • Fax: 850 478 2671 • www.stl-inc.com
STL Pensacola is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-69	Matrix Spike True Value	
01267-70	Matrix Spike Result	
01267-71	Matrix Spike % Recovery	
01267-72	Matrix Spike Duplicate True Value	
01267-73	Matrix Spike Duplicate Result	

PARAMETER	01267-69	01267-70	01267-71	01267-72	01267-73
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	500	535	106 %	500	539
1,1-Dichloroethane, ug/l	500	517	103 %	500	532
1,1-Dichloroethene, ug/l	500	839	168 %M2	500	562
cis-1,2-Dichloroethene, ug/l	500	509	94 %	500	512
trans-1,2-Dichloroethene, ug/l	500	571	114 %	500	574
Ethylbenzene, ug/l	500	561	112 %	500	564
Tetrachloroethene, ug/l	500	1621	64 %	500	1640
Toluene, ug/l	500	538	107 %	500	541
1,1,1-Trichloroethane, ug/l	500	529	68 %	500	552
1,1,2-Trichloroethane, ug/l	500	418	84 %	500	437
Trichloroethene, ug/l	500	545	102 %	500	562
Vinyl chloride, ug/l	500	478	96 %	500	477
Xylenes, Total, ug/l	1500	1620	108 %	1500	1620
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	47.3	95 %	50	48.0
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	47.0	94 %	50	48.8
Dilution Factor	10	10	10	10	10
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	17:57	17:57	17:57	18:53	18:53
Batch ID	LUW007	LUW007	LUW007	LUW007	LUW007
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-74	Matrix Spike Duplicate % Recovery	
01267-75	MS Accuracy Advisory Limit (%R)	
01267-76	Precision (%RPD) MS/MSD	
01267-77	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-74	01267-75	01267-76	01267-77
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	107 %	79-126	1	12
1,1-Dichloroethane, ug/l	106 %	68-141	3	24
1,1-Dichloroethene, ug/l	112 %	51-156	39M2	19
cis-1,2-Dichloroethene, ug/l	95 %	76-121	1	10
trans-1,2-Dichloroethene, ug/l	115 %	69-128	0	13
Ethylbenzene, ug/l	112 %	76-138	0	11
Tetrachloroethene, ug/l	68 %	59-147	6	31
Toluene, ug/l	108 %	79-125	1	10
1,1,1-Trichloroethane, ug/l	73 %	49-139	6	26
1,1,2-Trichloroethane, ug/l	87 %	71-137	4	26
Trichloroethene, ug/l	106 %	63-130	3	13
Vinyl chloride, ug/l	95 %	6-135	0	24
Xylenes, Total, ug/l	108 %	72-132	0	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	96 %	70-130	1	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	98 %	70-130	4	21
Dilution Factor	10	10	100	100
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	18:53	---	---	---
Batch ID	LUW007	LUW007	LUW007	LUW007
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-78	Method Blank	
01267-79	Lab Control Standard True Value	
01267-80	Lab Control Standard Result	
01267-81	Lab Control Standard % Recovery	
01267-82	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-78	01267-79	01267-80	01267-81	01267-82
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	46	92 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	44	88 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	43	86 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	42	84 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.43U	50	49	98 %	72-145
Tetrachloroethene, ug/l	1.2F	50	46	92 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	46	92 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	39	78 %	61-136
Trichloroethene, ug/l	0.31U	50	46	92 %	74-122
Vinyl chloride, ug/l	0.39U	50	27	54 %	4-126
Xylenes, Total, ug/l	0.38U	150	143	95 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	113 %	50	48.6	97 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	115 %	50	48.3	97 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	11:50	12:47	11:50	11:50	11:50
Batch ID	LUW008	LUW008	LUW008	LUW008	LUW008
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-83	Matrix Spike True Value	
01267-84	Matrix Spike Result	
01267-85	Matrix Spike % Recovery	
01267-86	Matrix Spike Duplicate True Value	
01267-87	Matrix Spike Duplicate Result	

PARAMETER	01267-83	01267-84	01267-85	01267-86	01267-87
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	53	105 %	50	51
1,1-Dichloroethane, ug/l	50	48	96 %	50	48
1,1-Dichloroethene, ug/l	50	90	179 %M2	50	81
cis-1,2-Dichloroethene, ug/l	50	49	93 %	50	47
trans-1,2-Dichloroethene, ug/l	50	55	109 %	50	52
Ethylbenzene, ug/l	50	56	112 %	50	54
Tetrachloroethene, ug/l	50	302	424 %M2	50	234
Toluene, ug/l	50	54	106 %	50	51
1,1,1-Trichloroethane, ug/l	50	49	98 %	50	49
1,1,2-Trichloroethane, ug/l	50	40	80 %	50	42
Trichloroethene, ug/l	50	55	107 %	50	52
Vinyl chloride, ug/l	50	39	79 %	50	30
Xylenes, Total, ug/l	150	163	109 %	150	156
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	45.8	92 %	50	47.1
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	43.2	86 %	50	45.6
Dilution Factor	1	1	1	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.18.01	01.19.01
Analysis Time	15:03	15:03	15:03	15:59	15:59
Batch ID	LUW008	LUW008	LUW008	LUW008	LUW008
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-88	Matrix Spike Duplicate % Recovery	
01267-89	MS Accuracy Advisory Limit (%R)	
01267-90	Precision (%RPD) MS/MSD	
01267-91	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-88	01267-89	01267-90	01267-91
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	100 %	79-126	4	12
1,1-Dichloroethane, ug/l	95 %	68-141	1	24
1,1-Dichloroethene, ug/l	163 %M2	51-156	10	19
cis-1,2-Dichloroethene, ug/l	89 %	76-121	4	10
trans-1,2-Dichloroethene, ug/l	104 %	69-128	5	13
Ethylbenzene, ug/l	107 %	76-138	5	11
Tetrachloroethene, ug/l	288 %M2	59-147	38M2	31
Toluene, ug/l	101 %	79-125	5	10
1,1,1-Trichloroethane, ug/l	97 %	49-139	1	26
1,1,2-Trichloroethane, ug/l	83 %	71-137	3	26
Trichloroethene, ug/l	101 %	73-129	6	13
Vinyl chloride, ug/l	60 %	6-135	27M2	24
Xylenes, Total, ug/l	104 %	72-132	5	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	94 %	70-130	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	91 %	70-130	6	21
Dilution Factor	1	---	---	1
Analysis Date	01.19.01	01.19.01	01.19.01	---
Analysis Time	15:59	---	---	---
Batch ID	LUW008	LUW008	LUW008	LUW008
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126
Page 21

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-92	Method Blank	
01267-93	Lab Control Standard True Value	
01267-94	Lab Control Standard Result	
01267-95	Lab Control Standard % Recovery	
01267-96	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-92	01267-93	01267-94	01267-95	01267-96
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.21U	50	50	100 %	78-120
1,1-Dichloroethane, ug/l	0.19U	50	54	108 %	74-131
1,1-Dichloroethene, ug/l	0.33U	50	50	100 %	56-145
cis-1,2-Dichloroethene, ug/l	0.87J7	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.23U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.52J7	50	53	106 %	72-145
Tetrachloroethene, ug/l	0.83J7	50	53	106 %	65-134
Toluene, ug/l	0.21U	50	53	106 %	77-122
1,1,1-Trichloroethane, ug/l	0.31U	50	51	102 %	55-130
1,1,2-Trichloroethane, ug/l	1.0F	50	58	116 %	61-136
Trichloroethene, ug/l	0.22U	50	51	102 %	74-122
Vinyl chloride, ug/l	0.48U	50	29	58 %	4-126
Xylenes, Total, ug/l	0.40J7	150	158	105 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	106 %	50	48.5	97 %	75-118
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	98 %	50	50.2	100 %	76-125
Dilution Factor	1	1	1	1	1
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	11:43	13:57	13:57	13:57	13:57
Batch ID	PHW009	PH009	PHW009	PHW009	PHW009
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-97	Matrix Spike True Value	
01267-98	Matrix Spike Result	
01267-99	Matrix Spike % Recovery	
01267-100	Matrix Spike Duplicate True Value	
01267-101	Matrix Spike Duplicate Result	

PARAMETER	01267-97	01267-98	01267-99	01267-100	01267-101
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	2500	2455	98 %	2500	2495
1,1-Dichloroethane, ug/l	2500	2728	109 %	2500	2807
1,1-Dichloroethene, ug/l	2500	2430	97 %	2500	2462
cis-1,2-Dichloroethene, ug/l	2500	2204	82 %	2500	2244
trans-1,2-Dichloroethene, ug/l	2500	2323	93 %	2500	2370
Ethylbenzene, ug/l	2500	2619	104 %	2500	2657
Tetrachloroethene, ug/l	2500	4417	90 %	2500	4348
Toluene, ug/l	2500	2570	103 %	2500	2639
1,1,1-Trichloroethane, ug/l	2500	2521	101 %	2500	2584
1,1,2-Trichloroethane, ug/l	2500	2689	108 %	2500	2934
Trichloroethene, ug/l	2500	2527	99 %	2500	2560
Vinyl chloride, ug/l	2500	1445	58 %	2500	1510
Xylenes, Total, ug/l	7500	7812	104 %	7500	7868
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	47.9	96 %	50	48.9
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	49.4	99 %	50	51.6
Dilution Factor	50	50	50	50	50
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	17:48	17:48	17:48	18:54	18:54
Batch ID	PHW009	PHW009	PHW009	PHW009	PHW009
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-102	Matrix Spike Duplicate % Recovery	
01267-103	MS Accuracy Advisory Limit (%R)	
01267-104	Precision (%RPD) MS/MSD	
01267-105	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-102	01267-103	01267-104	01267-105
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	100 %	79-126	2	12
1,1-Dichloroethane, ug/l	112 %	68-141	3	24
1,1-Dichloroethene, ug/l	98 %	51-156	1	19
cis-1,2-Dichloroethene, ug/l	84 %	76-121	2	10
trans-1,2-Dichloroethene, ug/l	95 %	69-128	2	13
Ethylbenzene, ug/l	106 %	76-138	1	11
Tetrachloroethene, ug/l	87 %	59-147	3	31
Toluene, ug/l	106 %	79-125	3	10
1,1,1-Trichloroethane, ug/l	103 %	49-139	2	26
1,1,2-Trichloroethane, ug/l	117 %	71-137	9	26
Trichloroethene, ug/l	100 %	73-129	1	13
Vinyl chloride, ug/l	60 %	6-135	4	24
Xylenes, Total, ug/l	105 %	72-132	1	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	98 %	75-118	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	103 %	76-125	4	21
Dilution Factor	50	50	50	50
Analysis Date	01.18.01	01.18.01	01.18.01	01.18.01
Analysis Time	18:54	---	---	---
Batch ID	PHW009	PHW009	PHW09	PHW009
Prep Method	5030	5030	5030	5030
Analyst	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-106	Method Blank	
01267-107	Lab Control Standard True Value	
01267-108	Lab Control Standard Result	
01267-109	Lab Control Standard % Recovery	
01267-110	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-106	01267-107	01267-108	01267-109	01267-110
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.21U	50	52	104 %	78-120
1,1-Dichloroethane, ug/l	0.19U	50	57	114 %	74-131
1,1-Dichloroethene, ug/l	0.33U	50	51	102 %	56-145
cis-1,2-Dichloroethene, ug/l	0.14U	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.23U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.39U	50	56	112 %	72-145
Tetrachloroethene, ug/l	0.37U	50	55	110 %	65-134
Toluene, ug/l	0.21U	50	56	112 %	77-122
1,1,1-Trichloroethane, ug/l	0.31U	50	52	104 %	55-130
1,1,2-Trichloroethane, ug/l	0.36U	50	52	104 %	61-136
Trichloroethene, ug/l	0.22U	50	53	106 %	74-122
Vinyl chloride, ug/l	0.48U	50	30	60 %	4-126
Xylenes, Total, ug/l	0.31U	150	162	108 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	105 %	50	47.2	94 %	75-118
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	106 %	50	49.1	98 %	76-125
Dilution Factor	1	1	1	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	11:20	12:26	12:26	12:26	12:26
Batch ID	PHW010	PHW010	PHW010	PHW010	PHW010
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-111	Matrix Spike True Value	
01267-112	Matrix Spike Result	
01267-113	Matrix Spike % Recovery	
01267-114	Matrix Spike Duplicate True Value	
01267-115	Matrix Spike Duplicate Result	

PARAMETER	01267-111	01267-112	01267-113	01267-114	01267-115
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	48	97 %	50	49
1,1-Dichloroethane, ug/l	50	54	109 %	50	49
1,1-Dichloroethene, ug/l	50	49	98 %	50	48
cis-1,2-Dichloroethene, ug/l	50	42	82 %	50	42
trans-1,2-Dichloroethene, ug/l	50	46	93 %	50	46
Ethylbenzene, ug/l	50	53	107 %	50	53
Tetrachloroethene, ug/l	50	52	103 %	50	52
Toluene, ug/l	50	53	106 %	50	52
1,1,1-Trichloroethane, ug/l	50	49	98 %	50	44
1,1,2-Trichloroethane, ug/l	50	47	91 %	50	51
Trichloroethene, ug/l	50	50	100 %	50	50
Vinyl chloride, ug/l	50	28	57 %	50	27
Xylenes, Total, ug/l	150	153	101 %	150	158
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	46.9	94 %	50	47.8
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.7	97 %	50	45.0
Dilution Factor	1	1	1	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	15:25	15:25	15:25	16:33	16:33
Batch ID	PHW010	PHW010	PHW010	PHW010	PHW010
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-116	Matrix Spike Duplicate % Recovery	
01267-117	MS Accuracy Advisory Limit (%R)	
01267-118	Precision (%RPD) MS/MSD	
01267-119	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-116	01267-117	01267-118	01267-119
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	99 %	79-126	2	12
1,1-Dichloroethane, ug/l	98 %	68-141	11	24
1,1-Dichloroethene, ug/l	97 %	51-156	1	19
cis-1,2-Dichloroethene, ug/l	83 %	76-121	1	10
trans-1,2-Dichloroethene, ug/l	93 %	69-128	0	13
Ethylbenzene, ug/l	105 %	76-138	1	11
Tetrachloroethene, ug/l	103 %	59-147	1	31
Toluene, ug/l	103 %	79-125	3	10
1,1,1-Trichloroethane, ug/l	89 %	49-139	10	26
1,1,2-Trichloroethane, ug/l	99 %	71-137	9	26
Trichloroethene, ug/l	100 %	73-129	0	13
Vinyl chloride, ug/l	53 %	6-135	6	24
Xylenes, Total, ug/l	105 %	72-132	4	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	96 %	75-118	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	90 %	76-125	7	21
Dilution Factor	1	1	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	16:33	---	---	---
Batch ID	PHW010	PHW010	PHW010	PHW010
Prep Method	5030	5030	5030	5030
Analyst	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-120	Method Blank	
01267-121	Lab Control Standard True Value	
01267-122	Lab Control Standard Result	
01267-123	Lab Control Standard % Recovery	
01267-124	LCS Accuracy Control Limit (%R)	

PARAMETER	01267-120	01267-121	01267-122	01267-123	01267-124
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.21U	50	52	104 %	78-120
1,1-Dichloroethane, ug/l	0.19U	50	57	114 %	74-131
1,1-Dichloroethene, ug/l	0.33U	50	53	106 %	56-145
cis-1,2-Dichloroethene, ug/l	0.14U	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.23U	50	50	100 %	71-120
Ethylbenzene, ug/l	0.39U	50	57	114 %	72-145
Tetrachloroethene, ug/l	0.37U	50	56	112 %	65-134
Toluene, ug/l	0.26J7	50	57	114 %	77-122
1,1,1-Trichloroethane, ug/l	0.31U	50	52	104 %	55-130
1,1,2-Trichloroethane, ug/l	0.76J7	50	44	88 %	61-136
Trichloroethene, ug/l	0.22U	50	53	106 %	74-122
Vinyl chloride, ug/l	0.48U	50	28	56 %	4-126
Xylenes, Total, ug/l	0.31U	150	163	109 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	50	46.6	93 %	75-118
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	50	48.5	97 %	76-125
Dilution Factor	1	1	1	1	1
Analysis Date	01.22.01	01.22.01	01.22.01	01.22.01	01.22.01
Analysis Time	11:41	13:03	13:03	13:03	13:03
Batch ID	PHW011	PHW011	PHW011	PHW011	PHW011
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-125	Matrix Spike True Value	
01267-126	Matrix Spike Result	
01267-127	Matrix Spike % Recovery	
01267-128	Matrix Spike Duplicate True Value	
01267-129	Matrix Spike Duplicate Result	

PARAMETER	01267-125	01267-126	01267-127	01267-128	01267-129
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	50	97 %	50	49
1,1-Dichloroethane, ug/l	50	54	102 %	50	56
1,1-Dichloroethene, ug/l	50	51	101 %	50	49
cis-1,2-Dichloroethene, ug/l	50	48	78 %	50	47
trans-1,2-Dichloroethene, ug/l	50	45	91 %	50	45
Ethylbenzene, ug/l	50	61	107 %	50	59
Tetrachloroethene, ug/l	50	238	95 %	50	214
Toluene, ug/l	50	52	103 %	50	51
1,1,1-Trichloroethane, ug/l	50	49	98 %	50	50
1,1,2-Trichloroethane, ug/l	50	52	101 %	50	56
Trichloroethene, ug/l	50	51	103 %	50	50
Vinyl chloride, ug/l	50	27	54 %	50	28
Xylenes, Total, ug/l	150	161	107 %	150	157
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	49.7	99 %	50	46.9
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	50.7	101 %	50	50.7
Dilution Factor	1	1	1	1	1
Analysis Date	01.22.01	01.22.01	01.22.01	01.22.01	01.22.01
Analysis Time	15:42	15:42	15:42	16:49	16:49
Batch ID	PHW011	PHW011	PHW011	PHW011	PHW011
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-130	Matrix Spike Duplicate % Recovery	
01267-131	MS Accuracy Advisory Limit (%R)	
01267-132	Precision (%RPD) MS/MSD	
01267-133	MS Precision Advisory Limit (%RPD)	

PARAMETER	01267-130	01267-131	01267-132	01267-133
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	96 %	79-126	2	12
1,1-Dichloroethane, ug/l	105 %	68-141	3	24
1,1-Dichloroethene, ug/l	97 %	51-156	4	19
cis-1,2-Dichloroethene, ug/l	78 %	76-121	0	10
trans-1,2-Dichloroethene, ug/l	91 %	69-128	0	13
Ethylbenzene, ug/l	103 %	76-138	5	11
Tetrachloroethene, ug/l	46 %M2	59-147	69M2	31
Toluene, ug/l	101 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	100 %	49-139	2	26
1,1,2-Trichloroethane, ug/l	110 %	71-137	8	26
Trichloroethene, ug/l	100 %	73-129	2	13
Vinyl chloride, ug/l	55 %	6-135	2	24
Xylenes, Total, ug/l	104 %	72-132	3	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	94 %	75-118	5	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	101 %	76-125	0	21
Dilution Factor	1	1	1	1
Analysis Date	01.22.01	01.22.01	01.22.01	01.22.01
Analysis Time	16:49	---	---	---
Batch ID	PHW011	PHW011	PHW011	PHW011
Prep Method	5030	5030	5030	5030
Analyst	CP	CP	CP	CP

Rick Hayes, Project Manager

Final Page Of Report

STL Pensacola

PROJECT SAMPLE INSPECTION FORM

SEVERN TRENT SERVICES

Lab Order #: C101267 Date Received: 01-15-01

1. Was there a Chain of Custody? (Yes) No*
2. Was Chain of Custody properly filled out and relinquished? ~~Yes~~ (No) 01-15-01
3. Were samples received cold? (Yes) No* N/A (Criteria: 2° - 6°C: STL-SOP
4. Were all samples properly labeled and identified? Yes (No*)
5. Did samples require splitting or compositing*? Yes* (No) Req By: PM Client Other*
6. Were samples received in proper containers for analysis requested? (Yes) No*
7. Were all sample containers received intact? (Yes) No*
8. Were samples checked for preservative? *(Check pH of all H_2O requiring preservative (STL-PN SOP 917) except VOA vials that require zero headspace)+* Yes No* (N/A)
9. Is there sufficient volume for analysis requested? (Yes) No* N/A *(Can)*
10. Were samples received within Holding Time? (REFER TO STL-SOP 1040) (Yes) No*
11. Is Headspace visible > ¼" in diameter in VOA vials?* If any headspace is evident, comment in out-of-control section. (Yes*) No N/A
12. If sent, were matrix spike bottles returned? Yes No* (N/A)
13. Was Project Manager notified of problems? (initials: JC) (Yes) No* N/A PSIF

Airbill Number(s): 8225 0085 4675

Shipped By: FedEx

Cooler Number(s): 497M

Shipping Charges: N/A

Cooler Weight(s): 59#

Cooler Temp(s) (°C): 2°C (CCK3)

(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

Out of Control Events and Inspection Comments:

(4) 2 40mL VIALS 047-SITE 11-SP 36-40-GW-1122001 HAVE THE COLLECTION TIMES FOR 047-SITE 11-SP 38-36-GW-1122001 AND WILL BE LOGGED IN FOR SP-38-36. 2 40mL VIALS 047-SITE 11-SP 36-40-GW-1122001 HAVE THE COLLECTION TIMES FOR 047-SITE 11-SP 35-36-GW-1122001 AND WILL BE LOGGED IN FOR SP-35-36. JC 01-15-01

(2.) 2 40mL VIALS TRIP BLANKS WERE INCLUDED WITH SHIPMENT, AND NOT LISTED ON COC. (11.) 2 40mL VIALS FOR 047-SITE 11-SP 40-48-GW-1122001 AND (over)

(USE BACK OF PSIF FOR ADDITIONAL NOTES AND COMMENTS)

Inspected By: JC **Date:** 01-15-01 **Logged By:** PKE **Date:** 1/15/01

♠ *Note all Out-of-Control and/or questionable events on Comment Section of this form. For holding times, the analyticl department will flag immediate hold time samples(pH, Dissolved O_2, Residual CL) as out of hold time, therefore, these samples will not be documented on this PSIF.*

♦ *If Other, note who requested the splitting or compositing of samples on the Comment Section of this form. All volatile samples requested to be split or composited must be done in the Volatile Lab. Document: "Volatile sample values may be compromised due to sample splitting (compositing)"*

+ *All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (STL-SOP 938, section 2.2.9).*

* *According to EPA, ¼" of headspace is allowed in 40 ml vials requiring volatile analysis, however, STL makes it policy to record any headspace as out-of-control (STL-SOP 938, section 2.2.12).*

WORD\ELXINS\SAMPCTRL\PSIF.DOC November 29, 2000

CHAIN OF CUSTODY

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001- • Fax (850) 474-4789

itted To *Your* Success

LAB ACCESSION # C10/267

1 - Bottle Shipment Information

CLIENT: CCI/J.A. JONES
CLIENT PROJECT NUMBER: 047

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE: H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	PLASTIC CONTAINERS: 8 oz	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	GLASS CONTAINERS: 120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	NOTES
			X															X						

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER	AI AIR	SW SURFACE WATER
WW WASTEWATER	SO SOIL	SL SLUDGE
GW GROUNDWATER	OI OIL	ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	BTH C10104	8021B		TOTAL # OF BOTTLES
047-Site11-EQ3-1112001	1/11/01	1300		X	X	1	2
-Site11-SP41-40-GW-1112001	1/11/01	1200	GW	X	X	2	2
ite11-SP41-44-GW-1112001	1/11/01	1300	GW	X	X	3	2
ite11-SP41-48-GW-1112001	1/11/01	1400	GW	X	X	4	2
Site11-SP40-36-GW-1112001	1/11/01	1205	GW	X	X	5	2
047-Site11-SP40-40-GW-1112001	1/11/01	1245	GW	X	X	6	2
047-Site11-SP40-44-GW-1112001	1/11/01	1330	GW	X	X	7	2
047-Site11-SP40-48-GW-1112001	1/11/01	1415	GW	X	X	8	2
047-Site11-DUP2-GW-1122001	1/12/01		GW	X	X	9	2
047Site11-EQ4-1122001	1/12/01	1200		X	X	10	2

Total Number of Bottles/Containers:

Relinquished By	Date	Time	Received By	Date	Time
Scott A Sloan	1/12/01	1700	F. COBURGER F Coburger	01-15-01	0930

Client CCI/J.A. JONES			Purchase Order Number
Address 6219 Authority Ave			Project Number CTO-047
City Jacksonville	State Fl	Zip 32221	Project Name Site 11 - KINGS BAY
Phone Number (904) 777-4812	Fax Number (904) 777-4262		Project Location KINGS BAY SUB-BASE
Project Manager MIKE HALIL			Sampled By Scott A Sloan

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
3 hours - 2x standard price		
5-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed ______

CHAIN OF CUSTODY

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001- • Fax (850) 474-4789

itted To *Your* Success

LAB ACCESSION # C10126?

.T 1 - Bottle Shipment Information

CLIENT:	CLIENT PROJECT NUMBER:

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS									NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz.	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	
			X															X						

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RLKC1610	8021B		TOTAL # OF BOTTLES
047-Site11-SP38-36-GW-1122001	1/12/01	0735	GW	X	X	11	2
- -Site11-SP38-40-GW-1122001	1/12/01	0830	GW	X	X	12	2
ite11-SP38-44-GW-1122001	1/12/01	0930	GW	X	X	13	2
047-Site11SP38-48GW-1122001	1/12/01	1010	GW	X	X	14	2
047-Site11-SP35-36-GW-1122001	1/12/01	0740	GW	X	X	15	2
047-Site11-SP35-40-GW-1122001	1/12/01	0916	GW	X	X	16	2
047-Site11-SP35-44GW-1122001	1/12/01	0935	GW	X	X	17	2
047-Site11-SP35-48-GW-1122001	1/12/01	1010	GW	X	X	18	2
047Site11SP36-36-GW-1122001	1/12/01	1100	GW	X	X	19	2
047Site11SP36-40-GW-1122001	1/12/01	1130	GW	X	X	20	2

Total Number of Bottles/Containers:

Relinquished By	Date	Time	Received By	Date	Time
Scott Sloan	1/12/01	~~0?0~~ 1700	F. Coburn/H. Arup	01-15-01	0930

Client ECI/JA JONES	Purchase Order Number
Address 6215 Authority Ave	Project Number 047
City JACKSONVILLE — State FL — Zip 32221	Project Name Site 11
Phone Number (904) 777-4812 — Fax Number (904) 777-4262	Project Location KINGS BAY SUB BASE
Project Manager MIKE HALIL	Sampled By Scott A Sloan

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
48 hours - 2x standard price		
3-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed ________

3 of 4

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001- • Fax (850) 474-4789
itted To *Your* Success

CHAIN OF CUSTODY

LAB ACCESSION # G01267

T 1 - Bottle Shipment Information

CLIENT: CCI / J. A. JONES | **CLIENT PROJECT NUMBER:** 047

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE: H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	PLASTIC CONTAINERS: 8 oz	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	GLASS CONTAINERS: 120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	NOTES
68			X															X						

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RLH C/Alcohol	8021B		TOTAL # OF BOTTLES
047-Site11-Sp36-44-GW-1122001	1/12/01	1215	GW	X	X	21	2
...-Site11-Sp36-48-GW-1122001	1/12/01	1240	GW	X	X	22	2
...e11-Sp37-36-GW-1122001	1/12/01	1100	GW	X	X	23	2
...ite11-Sp37-40-GW-1122001	1/12/01	1150	GW	X	X	24	2
...Site11-Sp37-44-GW-1122001	1/12/01	1230	GW	X	X	25	2
047-Site11-Sp37-48-GW-1122001	1/12/01	1308	GW	X	X	26	2
047-Site11-Sp42-36-GW-1122001	1/12/01	1300	GW	X	X	27	2
047-Site11-Sp42-40-GW-1122001	1/12/01	1330	GW	X	X	28	2
047-Site11-Sp42-44-GW-1122001	1/12/01	1400	GW	X	X	29	2
047-Site11-Sp42-48-GW-1122001	1/12/01	1445	GW	X	X	30	2

Total Number of Bottles/Containers:

Relinquished By	Date	Time	Received By	Date	Time
Scott Sloan	1/12/01	1700	F. Coburger / Holbrugger	01-15-01	0930

Client CCI/ JA JONES	Purchase Order Number
Address 6219 Authority Ave	Project Number 047
City Jacksonville — State Fl — Zip 32221	Project Name Site 11
Phone Number (904) 772-4812 — Fax Number (904) 777-4262	Project Location KINGS BAY SUB BASE
Project Manager MIKE HALIL	Sampled By

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
.8 hours - 2x standard price		
.-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed ______

FORM # 12694 — WHITE — LAB — CANARY — REPORT — PINK — CLIENT

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001 • Fax (850) 474-4789

itted To *Your* Success

CHAIN OF CUSTODY

LAB ACCESSION # C/0/267

.T 1 - Bottle Shipment Information

CLIENT: CCI/JA. JONES | CLIENT PROJECT NUMBER: 047

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS									NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	
68			X															X						

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER	AI AIR	SW SURFACE WATER
WW WASTEWATER	SO SOIL	SL SLUDGE
GW GROUNDWATER	OI OIL	ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RLNC(9010)	8021B												TOTAL # OF BOTTLES
047-Site11-SP39-36-GW-112001	1/12/01	1340	GW	X	X											31	2
047-Site11-SP39-40-GW-112001	1/12/01	1400	GW	X	X											32	2
...te11-SP39-44-GW-112001	1/12/01	1435	GW	X	X											33	2
047-Site11-SP39-48-GW-112001	1/12/01	1515	GW	X	X											34	2

Total Number of Bottles/Containers: 68

Relinquished By	Date	Time	Received By	Date	Time
Scott Sloan	1/12/01	1700	F.COBURGER/[illegible]	01-15-01	0930

Client CCI/JA JONES	Purchase Order Number
Address 6219 Authority Ave	Project Number 047
City JACKSONVILLE · State FL · Zip 32221	Project Name SITE 11
Phone Number (904) 777-4812 · Fax Number (904) 777-4262	Project Location KINGS BAY SUB BASE
Project Manager MIKE HALIL	Sampled By Scott Sloan

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
3 hours - 2x standard price		
3-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed ____

SEVERN TRENT SERVICES

Data Qualifiers for Final Report

STL Pensacola

STL-Pensacola Inorganic/Organic	
B1	The analyte was detected in the associated method blank (sample itself is flagged even though sample is ND).
B2	The analyte was detected in the sample(s) and in the associated method blank analyzed on the day samples were extruded; however, this analyte was not detected in the blank analyzed with the samples.
B3	The analyte was found in the associated blank as well as in the associated sample(s) (qualifier is applied to the sample, notto the blank).
B4	Sample results were corrected due to contaminants in Fractionation Blank
D	Diluted out (surrogate or spike due to sample dilution)
E	Compound concentration exceeds the upper calibration range of the instrument.
F	The reported value is < STL-Pensacola RL and > the STL-Pensacola MDL; therefore, the quantitation is estimation (The STL-PN RL is at or above lowest calibration standard in the initial calibration curve).
G	Sample and/or duplicate result is at or below 5 X (times) the STL Reporting Limit and the absolute difference between the sample and duplicate result is at or below the STL reporting limit; therefore, the results are "in control".
H1	Sample and/or duplicate is below 5 X (times) the STL Reporting Limit and the absolute difference between the results exceeds the STL Reporting Limit; therefore, the results are "out of control"
H2	Sample and duplicate (or MS and MSD) RPD is above control limit.
J (description)	The analyte was positively identified, the quantitation may be an estimation
J4	(For positive results)Temperature limits exceeded ($\leq$2°C or $\geq$ 6°C), non-reportable for NDPES compliance monitoring.
J6	(For positive results) LCS or Surrogate %R is > upper control limit (UCL), results may be biased high
J7	The reported value is > the laboratory MDL and < lowest calibration standard; therefore, the quantitation is an estimation (this qualifier should only be used when the STL-PN RL is below the lowest calibration standard in the initial calibration).
J8	Matrix spike and post spike recoveries are outside control limits. See out of Control Events/Corrective Action Form.
J9	(For positive results) LCS or Surrogate %R is < lower control limit (LCL), results may be biased low
M1	A matrix effect was present ([1]sample, MS or MSD was analyzed twice to confirm surrogate/spike failure, [2]sample and/or MS/MSD chromatogram(s) had interfering peaks, [3]sample result was > 4 X spike added, [4]metals serial dilution was performed, or [5]metals post spike is < 40% R)
.2	The MS and/or MSD %R or RPD was outside upper or lower control limits; not necessarily due to matrix effect.
/C	Not Calculable; Sample spiked is > 4X spike concentration (may also use this flag in place of negative numbers)
NH	Sample and duplicate results are "out of control". The sample is nonhomogeneous.
NoMS	Not enough sample provided to prepare and/or analyze a method-required matrix spike (MS) and/or duplicate (MSD)
Q	The analytical (post digestion) spike is reported due to the percent recovery being outside limits on the matrix (pre-digestion) spike.
R (description)	The data may be unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
R1	(For nondetects) Temperature limits exceeded ($\leq$2°C or $\geq$ 6°C); non-reportable for NDPES compliance monitoring
R2	Improper preservation, no preservative present or insufficient amounts of preservative in sample upon receipt, non-reportable for NDPES compliance monitoring
R3	Improper preservation, incorrect preservative present in sample upon receipt, non-reportable for NPDES compliance
R4	Holding time exceeded, non-reportable for NDPES compliance monitoring.
R5	Collection requirements not met, improper container used for sample
R6	LCS or surrogate %R is < LCL and analyte is not detected or surrogate %R is < 10% for detects/nondetects.
R7	Internal standard area outside –50% to +100% of calibration verification standard.
R8	Initial calibration or any calibration verification exceeds acceptance criteria.
R9	Not filtered and preserved at time of collection.
R10	Headspace >1/4" in diameter in volatile vials, non-reportable for NPDES compliance monitoring
R11	Samples were filtered and preserved within 4 hours of collection.
R12	Analysis performed outside the 12-hour tune or not within tune criteria.
S1	The Method of Standard Additions (MSA) has been performed on this sample.
S2	Incorrect sample amount was submitted to the laboratory for analysis
S3 (Flashpoint)	This method is not designed for solids and the results may not be accepted by any regulator for such purposes.
T	Second-column or detector confirmation exceeded the SW-846 criteria of 40% RPD for this compound.
TIC	The compound is not within the initial calibration curve. It is searched for qualitatively or as a Tentatively Identified Compound.
U	The reported value is $\leq$ Laboratory MDL (value for result will be the MDL, never below the MDL)
W	Post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is less than 50% spike absorbance.
@	Adjusted reporting limit due to sample composition, not due to overcal (dilution prior to digestion and/or analysis).
#	Elevated reporting limit due to insufficient sample size
' pt	The compound has been quantitated against a one point calibration.
(Metals & Wet Chem)	Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)

STL PENSACOLA

STATE CERTIFICATIONS

bama Department of Environmental Management, Laboratory ID No. 40150 (Drinking Water by Reciprocity with FL)

Arizona Department of Health Services, Lab ID No. AZ0589 (Hazardous Waste & Wastewater)

Arkansas Department of Pollution Control and Ecology, (No Laboratory ID No. assigned by state) (Environmental)

*State of **California**, Department of Health Services, Laboratory ID No. 2338 (Hazardous Waste and Wastewater)*

*State of **Connecticut**, Department of Health Services, Connecticut Lab Approval No. PH-0697 (Drinking Water, Hazardous Waste and Wastewater)*

***Delaware** Health & Social Services, Division of Public Health, Laboratory ID No. FL094 (Drinking Water by Reciprocity with FL)*

***Florida** DOH Laboratory ID No. E81010 (Drinking Water, Hazardous Waste and Wastewater)*

***Florida**, Radioactive Materials License No. G0733-1*

***Foreign Soil Permit**, Permit No. S-37599*

***Kansas** Department of Health & Environment, Laboratory ID No. E10253 (Wastewater and Hazardous Waste)*

*Commonwealth of **Kentucky**, Natural Resources and Environmental Protection Cabinet, Laboratory ID No. 90043 (Drinking Water)*

*State of **Louisiana**, DHH, Office of Public Health Division of Laboratories, Laboratory ID No. LA000017 (Drinking Water)*

Louisiana Department of Environmental Quality, Environmental Laboratory Accreditation Program, Agency Interest ID 30748 (Environmental - Accreditation Pending)

*of **Maryland**, DH&MH Laboratory ID No. 233 (Drinking Water by Reciprocity with Florida)*

*Commonwealth of **Massachusetts**, DEP, Laboratory ID No. M-FL094 (Hazardous Waste and Wastewater)*

*State of **Michigan**, Bureau of E&OccH, Laboratory ID No.9912 (Drinking Water by Reciprocity with Florida)*

***New Hampshire** DES ELAP, Laboratory ID No. 250599A (Wastewater)*

*State of **New Jersey**, Department of Environmental Protection & Energy, Laboratory ID No. 49006 (Wastewate and Hazardous Waster)*

***New York** State, Department of Health, Laboratory ID No. 11503 (Wastewater and Solids/Hazardous Waste)*

***North Carolina** Department of Environment & Natural Resources, Laboratory ID No. 314 (Hazardous Waste and Wastewater)*

***North Dakota** DH&Consol Labs, Laboratory ID No. R-108 (Drinking Water, Wastewater and Hazardous Waste by Reciprocity with Florida)*

*State of **Oklahoma**, Oklahoma Department of Environmental Quality, Laboratory ID No. 9810 (Hazardous Waste and Wastewater)*

*Commonwealth of **Pennsylvania**, Department of Environmental Resources, Laboratory ID No. 68-467 (Drinking Water)*

***South Carolina** DH&EC, Laboratory ID No. 96026 (Wastewater by Reciprocity with FL and Solids/Hazardous Waste by Reciprocity with CA)*

***Tennessee** Department of Health & Environment, Laboratory ID No. 02907 (Drinking Water)*

***Virginia** Department of General Services, Laboratory ID No. 00008 (Drinking Water by Reciprocity with FL)*

*State of **Washington**, Department of Ecology, Laboratory ID No. C282 (Hazardous Waste and Wastewater)*

***West Virginia** Division of Environmental Protection, Office of Water Resources, Laboratory ID No. 136 (Hazardous Waste and Wastewater by iprocity with FL)*

American Industrial Hygiene Association (AIHA) Accredited Laboratory, Laboratory ID No. 100704

\word\certlist\condcert.lst revised 01/16/01

February 7, 2001
I-60 Sampling Event Results

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-1	047-I60P-0207-01	02-07-01/11:00
02164-2	047-I60NP-0207-01	02-07-01/10:30

PARAMETER	02164-1	02164-2
Aromatic and Halogenated Volatiles (8021)		
Benzene, ug/l	0.28J7	0.31J7
1,1-Dichloroethane, ug/l	0.19U	0.19U
1,1-Dichloroethene, ug/l	0.41J7	0.54J7
cis-1,2-Dichloroethene, ug/l	6.0	6.5
trans-1,2-Dichloroethene, ug/l	0.23U	0.23U
Ethylbenzene, ug/l	0.39U	0.39U
Tetrachloroethene, ug/l	130	170
Toluene, ug/l	0.26J7	0.45J7
1,1,1-Trichloroethane, ug/l	0.31U	0.31U
1,1,2-Trichloroethane, ug/l	0.36U	0.93J7
Trichloroethene, ug/l	17	17
Vinyl chloride, ug/l	0.48U	0.48U
Xylenes, Total, ug/l	0.31U	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	107 %	105 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	96 %
Dilution Factor	1	1
Analysis Date	02.14.01	02.14.01
Batch ID	PHW022	PHW022
Prep Method	5030	5030
Analyst	DK	DK

SEVERN TRENT SERVICES

STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-3	Trip Blank	02-07-01

PARAMETER	02164-3
Aromatic and Halogenated Volatiles (8021)	
Benzene, ug/l	0.21U
1,1-Dichloroethane, ug/l	0.19U
1,1-Dichloroethene, ug/l	0.33U
cis-1,2-Dichloroethene, ug/l	0.14U
trans-1,2-Dichloroethene, ug/l	0.23U
Ethylbenzene, ug/l	0.39U
Tetrachloroethene, ug/l	0.37U
Toluene, ug/l	0.21U
1,1,1-Trichloroethane, ug/l	0.31U
1,1,2-Trichloroethane, ug/l	0.36U
Trichloroethene, ug/l	0.22U
Vinyl chloride, ug/l	0.48U
Xylenes, Total, ug/l	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	115 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	118 %
Dilution Factor	1
Analysis Date	02.14.01
Batch ID	PHW022
Prep Method	5030
Analyst	DK

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 5

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-14	Matrix Spike Duplicate % Recovery	
02164-15	MS Accuracy Advisory Limit (%R)	
02164-16	Precision (%RPD) MS/MSD	
02164-17	MS Precision Advisory Limit (%RPD)	

PARAMETER	02164-14	02164-15	02164-16	02164-17
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	105 %	79-126	17M2	12
1,1-Dichloroethane, ug/l	100 %	68-141	18	24
1,1-Dichloroethene, ug/l	110 %	51-156	16	19
cis-1,2-Dichloroethene, ug/l	88 %	76-121	37M1	10
trans-1,2-Dichloroethene, ug/l	100 %	69-128	33M2	13
Ethylbenzene, ug/l	11 %	76-138	3	11
Tetrachloroethene, ug/l	112 %	59-147	151M1	31
Toluene, ug/l	110 %	79-125	7	10
1,1,1-Trichloroethane, ug/l	91 %	49-139	24	26
1,1,2-Trichloroethane, ug/l	111 %	71-137	28M2	26
Trichloroethene, ug/l	101 %	73-129	25M1	13
Vinyl chloride, ug/l	76 %	6-135	3	24
Xylenes, Total, ug/l	110 %	72-132	0	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	99 %	75-118	1	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	93 %	76-125	4	21
Dilution Factor	1	---	1	1
Analysis Date	02.14.01	---	02.14.01	02.14.01
Batch ID	PHW022	---	PHW022	PHW022
Prep Method	5030	5030	5030	5030
Analyst	DK	---	DK	DK

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Rick Hayes, Project Manager

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-9	Matrix Spike True Value	
02164-10	Matrix Spike Result	
02164-11	Matrix Spike % Recovery	
02164-12	Matrix Spike Duplicate True Value	
02164-13	Matrix Spike Duplicate Result	

PARAMETER	02164-9	02164-10	02164-11	02164-12	02164-13
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	44	88 %	50	53
1,1-Dichloroethane, ug/l	50	42	83 %	50	50
1,1-Dichloroethene, ug/l	50	47	93 %	50	55
cis-1,2-Dichloroethene, ug/l	50	36	61 %M1	50	50
trans-1,2-Dichloroethene, ug/l	50	36	72 %	50	50
Ethylbenzene, ug/l	50	54	108 %	50	56
Tetrachloroethene, ug/l	50	142	16 %M1	50	190
Toluene, ug/l	50	52	103 %	50	56
1,1,1-Trichloroethane, ug/l	50	36	71 %	50	45
1,1,2-Trichloroethane, ug/l	50	42	84 %	50	55
Trichloroethene, ug/l	50	56	78 %	50	67
Vinyl chloride, ug/l	50	37	73 %	50	38
Xylenes, Total, ug/l	150	165	110 %	150	166
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	50.0	100 %	50	49.7
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.6	97 %	50	46.5
Dilution Factor	1	1	1	1	1
Analysis Date	02.14.01	02.14.01	02.14.01	02.14.01	02.14.01
Batch ID	PHW022	PHW022	PHW022	PHW022	PHW022
Prep Method	5030	5030	5030	5030	5030
Analyst	DK	DK	DK	DK	DK

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-4	Method Blank	
02164-5	Laboratory Control Standard True Value	
02164-6	Lab Control Standard Result	
02164-7	Lab Control Standard % Recovery	
02164-8	LCS Accuracy Control Limit (%R)	

PARAMETER	02164-4	02164-5	02164-6	02164-7	02164-8
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.21U	50	51	102 %	78-120
1,1-Dichloroethane, ug/l	0.19U	50	53	106 %	74-131
1,1-Dichloroethene, ug/l	0.33U	50	52	104 %	56-145
cis-1,2-Dichloroethene, ug/l	0.14U	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.23U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.39U	50	54	108 %	72-145
Tetrachloroethene, ug/l	0.37U	50	53	106 %	65-134
Toluene, ug/l	0.21U	50	55	110 %	77-122
1,1,1-Trichloroethane, ug/l	0.31U	50	48	96 %	55-130
1,1,2-Trichloroethane, ug/l	0.36U	50	53	106 %	61-136
Trichloroethene, ug/l	0.22U	50	51	102 %	74-122
Vinyl chloride, ug/l	0.48U	50	39	78 %	4-126
Xylenes, Total, ug/l	0.31U	150	161	107 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	109 %	50	50.5	101 %	75-118
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	111 %	50	49.3	99 %	76-125
Dilution Factor	1	1	1	1	---
Analysis Date	02.14.01	02.14.01	02.14.01	02.14.01	---
Batch ID	PHW022	PHW022	PHW022	PHW022	---
Prep Method	5030	5030	5030	5030	5030
Analyst	DK	DK	DK	DK	---

Georgia Department of Natural Resources

205 Butler Street, S.E., East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
Environmental Protection Division
(404) 656-4713

August 21, 2001

Mr. John R. Garner
Environmental Division
Dept. of Navy
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

RE: Revised Underground Injection Control Permit #089, Kings Bay Submarine Base Site 11, Old Camden County Landfill, Kings Bay, Georgia.

Dear Mr. Garner:

Enclosed is the third revised Underground Injection Control (UIC) Permit #089 for the Kings Bay Submarine Base Site 11, Old Camden Co. Landfill, located at Kings Bay, Georgia. The initial revised permit was issued on November 3, 1999 for the injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, and dilute sulfuric acid through fifty three (53) injection points. This revised UIC permit allows the U.S. Navy to utilize injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin through twenty five (25) additional wells and the fifty three (53) previously installed wells, and the injection of vegetable oil and lecithin through thirty nine (39) temporary soil borings. This permit is issued to assist the U.S. Navy with the remediation of soil and ground-water contaminated with chlorinated solvents at this site for up to five (5) years. This permit brings the total injection points to one hundred and seventeen (117). The UIC permit states two (2) standard conditions and seven (7) additional conditions in the attachment.

If you have any questions about the permit please contact Bijan Rahbar, UIC Coordinator, at (404) 656-3214.

Sincerely,

Harold F. Reheis

Harold F. Reheis
Director

Enclosure

cc: File UIC Permit #089
L. Rogers, EPD-CR
B. Hendricks, EPD-HWMB
S. Ross, CH2MHILL

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

INJECTION WELL OPERATING PERMIT

PERMIT NUMBER: #089 **DATE ISSUED: August 21, 2001**

FACILITY DATA: **INJECTION WELL TYPE: CLASS V (type 5X26)**

FACILITY: Naval Submarine Base
Site 11, Old Camden Co. Landfill
Kings Bay, GA
Camden County

OPERATOR: Dept. of Navy*
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

LOCATION: Lat: 30° 48' 40.2" N
Long: 81° 34' 18.4" W

EPD ID # GA17009001
HWMB Permit# HW-014(S)(2)

In accordance with the provisions of the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, as amended 2001, this permit is issued for the operation of the herein described injection system. Unless appealed, this permit is effective thirty (30) days after its issuance and is conditioned upon the following:

1) The Permittee's continued compliance with the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, the Georgia Rules for Water Quality Control (Revised) and the Georgia Rules for Safe Drinking Water (Revised); and

2) The Permittee's continued compliance with the Permittee's approved injection operation plan which is part of the approved Corrective Action Plan for this site, along with provisions of officially approved plan amendments, if any.

Additional conditions 1 through 7 are attached hereto.

This permit is issued in accordance with the initial application received July 24, 1998, and revised applications received October 1, 1998, June 2, 1999, September 1, 1999, October 29, 1999 July 10, 2001, and August 14, 2001. The revised injection operation plan was approved on August 21, 2001, and is based on the statements and supporting data entered herein or attached thereto, all of which are filed with the Environmental Protection Division of the Georgia Department of Natural Resources and hereby made a part of this permit.

This permit is subject to revocation for noncompliance with aforementioned conditions.

This permit expires on **August 21, 2006,** unless previously terminated.

Harold F. Reheis

Harold F. Reheis, Director, Environmental Protection Division
Georgia Department of Natural Resources

* CH2MHILL, as consultant to Kings Bay Submarine Base, may be contacted regarding technical questions at (904) 777-4812.

INJECTION WELL OPERATING PERMIT
ADDITIONAL CONDITIONS

1. Permit Conditions.

   a. This permit is not transferable until any new operator shall agree in writing to these additional permit conditions. Any new operator also shall provide the Environmental Protection Division (Division) with appropriate documentation that they have adequate financial assurances to plug all existing Class V wells.

   b. If the U.S. Navy (Operator) wishes to continue an activity regulated by this permit after the expiration of the permit, the Operator must apply for and obtain a new permit.

   c. The Operator shall report any instances of noncompliance with permit conditions to the Division in writing within five (5) working days of such noncompliance and shall take all reasonable steps to minimize the impact on the environment resulting from noncompliance with this permit and the Georgia Rules for Underground Injection Control.

   d. The Operator shall notify the Division of any proposed changes to the performance of the water injection system in writing at least thirty (30) days prior to the change.

   e. All reports submitted to the Division shall be signed and stamped by a Georgia Registered Professional Engineer or Professional Geologist.

   f. All analyses shall be performed by a laboratory approved or accredited by EPD in accordance with the Georgia Rules for Commercial Laboratory Accreditation, Chapter 391-3-26.

2. System Parameters.

   a. This permit is issued to the Operator for the purpose of operating an injection system consisting of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin at the above referenced site to aid in remediation of soil and ground water contaminated with chlorinated solvents.

   b. Number of Class V injection wells: seventy eight (78) injection wells and thirty nine (39) injection soil borings for a total of one hundred and seventeen (117) injection points.

   c. Injected fluid: Hydrogen peroxide and ferrous sulfate solution buffered with phosphoric acid, sulfuric acid, calcium phosphate, vegetable oil, and lecithin as needed. Soil borings will be injected with vegetable oil and lecithin only.

   d. Maximum injection rate per well: 1.0 gallons of liquid/min. (gpm)/well
   Maximum total injection rate: 117.0 gpm

   e. Maximum total injection volume per well: 1,440 gallons of liquid/day/well
   Maximum total injection volume: 168, 480 g/day

   f. Maximum daily average injection pressure (at well head): 40 psig.

3. Monitoring and Reporting Requirements.

   a. The Operator shall report to the Underground Injection Control Program of the Division the number and exact location of all Class V injection wells it installs or plugs on a quarterly basis. The reports are to be submitted to the UIC Program in accordance with the reporting schedule stipulated by the Hazardous Waste Management Branch.

   b. The Operator shall submit to the Division for its approval, a detailed schematic diagram and location map on any Class V injection well that is different in construction from the specifications contained in the UIC permit application, no later than 45 days prior to installation of the injection well. The Operator cannot install such a well until it receives approval from the Division.

   c. The Operator shall submit to the UIC Program one (1) copy of any report regarding this site which the Operator is required to submit to the Hazardous Waste Management Branch, or any other program within the Division.

   d. The Operator shall submit to the UIC Program an annual report which will contain the following information.

      1. Status of the injection system operation;

      2. Results of any ground-water sampling and analyses;

      3. Results of any soil sampling and analyses;

      4. An evaluation of the plume movement through the ground-water, if any;

      5. Comparisons of analyses to determine any changes in pollutant concentrations.

      The annual reports will be provided to the UIC Program in accordance with the schedule stipulated by the Hazardous Waste Management Branch.

4. Emergency Situations.

   a. The Operator is to immediately notify the Division of any emergency situation that affects the injection system and describe the remedial activity that the Operator is utilizing to correct the situation.

   b. The Operator is to immediately notify the Division when the emergency situation ceases to exist.

5. The Operator shall grant the Division permission to enter the facility property to conduct inspections of the injection system.

6. The Operator shall maintain a copy of this permit at the facility site.

7. The Operator shall, upon termination of the injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin through Class V injection wells at this site, properly plug and abandon all Class V wells constructed on this site in accordance with EPD's *Manual for Groundwater Monitoring* (September 1991) and notify the division within thirty (30) days of such termination and abandonment.

Georgia Department of Natural Resources
205 Jesse Hill Jr. Dr., S. E., Suite 1154, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Environmental Protection Division
Harold F. Reheis, Director
404-656-2833

December 20, 2001

Commanding Officer
Naval Submarine Base
1063 USS Tennessee Avenue
Kings Bay, GA 31547-2606

Re: Phase IV Injection Interim Measure Work Plan, Site 11

Dear Sir:

We have reviewed the Geo-Cleanse Phase IV Injection Work Plan for Site 11, the Old Camden County Landfill, at the Naval Submarine Base Kings Bay. As has been previously related in teleconference with your staff, the document is acceptable as submitted. Please proceed with the work at your convenience.

If you have questions or comments, please contact Billy Hendricks or Larry Papetti at 404-656-2833.

Sincerely,

Edward J. William
for

Bruce Khaleghi, Unit Coordinator
Hazardous Waste Management Branch

File: NSB (G)
c: Ken Yargus, Subase FE
Anthony Robinson, SouthDiv

S:\RDRIVE\BILLY\FACILITY\SUBASE\NSB-PhaseIVWP

Georgia Department of Natural Resources

205 Jesse Hill Jr. Drive, S.E., East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
Environmental Protection Division
(404) 656-4713

December 21, 2001

Mr. John R. Garner
Environmental Division
Dept. of Navy
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

RE: Underground Injection Control Permit #089-B, Kings Bay Submarine Base Site 11, Old Camden County Landfill, Kings Bay, Georgia.

Dear Mr. Garner:

Enclosed is the Underground Injection Control (UIC) Permit #089-B for the Kings Bay Submarine Base Site 11, Old Camden Co. Landfill, located at Kings Bay, Georgia. This UIC permit allows the U.S. Navy to utilize injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) injection wells. This permit is issued to assist the U.S. Navy with the remediation of soil and ground water contaminated with chlorinated solvents at this site for up to five (5) years. The UIC permit states two (2) standard conditions and seven (7) additional conditions in the attachment.

If you have any questions about the permit please contact Bijan Rahbar, UIC Coordinator, at (404) 656-3214.

Sincerely,

Harold F. Reheis

Harold F. Reheis
Director

Enclosure

cc: File UIC Permit #089
L. Rogers, EPD-CR
B. Hendricks, EPD-HWMB
S. Ross, CH2MHILL

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

INJECTION WELL OPERATING PERMIT

PERMIT NUMBER: #089-B **DATE ISSUED: December 21, 2001**

FACILITY DATA: **INJECTION WELL TYPE: CLASS V (type 5X26)**

FACILITY: Naval Submarine Base
Site 11, Old Camden Co. Landfill
Kings Bay, GA
Camden County

OPERATOR: Dept. of Navy*
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

LOCATION: Lat: 30° 48' 40.2" N
Long: 81° 34' 18.4" W

EPD ID # GA17009001
HWMB Permit# HW-014(S)(2)

In accordance with the provisions of the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, as amended 2001, this permit is issued for the operation of the herein described injection system. Unless appealed, this permit is effective thirty (30) days after its issuance and is conditioned upon the following:

1) The Permittee's continued compliance with the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, the Georgia Rules for Water Quality Control (Revised) and the Georgia Rules for Safe Drinking Water (Revised); and

2) The Permittee's continued compliance with the Permittee's approved injection operation plan which is part of the approved Corrective Action Plan for this site, along with provisions of officially approved plan amendments, if any.

Additional conditions 1 through 7 are attached hereto.

This permit is issued in accordance with the application received on November 26, 2001. The injection operation plan was approved on December 21, 2001, and is based on the statements and supporting data entered herein or attached thereto, all of which are filed with the Environmental Protection Division of the Georgia Department of Natural Resources and hereby made a part of this permit.

This permit is subject to revocation for noncompliance with aforementioned conditions.

This permit expires on **December 21, 2006,** unless previously terminated.

Harold F. Reheis, Director, Environmental Protection Division
Georgia Department of Natural Resources

* CH2MHILL, as consultant to Kings Bay Submarine Base, may be contacted regarding technical questions at (904) 777-4812.

INJECTION WELL OPERATING PERMIT
ADDITIONAL CONDITIONS

1. Permit Conditions.

   a. This permit is not transferable until any new operator shall agree in writing to these additional permit conditions. Any new operator also shall provide the Environmental Protection Division (Division) with appropriate documentation that they have adequate financial assurances to plug all existing Class V wells.

   b. If the U.S. Navy (Operator) wishes to continue an activity regulated by this permit after the expiration of the permit, the Operator must apply for and obtain a new permit.

   c. The Operator shall report any instances of noncompliance with permit conditions to the Division in writing within five (5) working days of such noncompliance and shall take all reasonable steps to minimize the impact on the environment resulting from noncompliance with this permit and the Georgia Rules for Underground Injection Control.

   d. The Operator shall notify the Division of any proposed changes to the performance of the water injection system in writing at least thirty (30) days prior to the change.

   e. All reports submitted to the Division shall be signed and stamped by a Georgia Registered Professional Engineer or Professional Geologist.

   f. All analyses shall be performed by a laboratory approved or accredited by EPD in accordance with the Georgia Rules for Commercial Laboratory Accreditation, Chapter 391-3-26.

2. System Parameters.

   a. This permit is issued to the Operator for the purpose of operating an injection system consisting of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer at the above referenced site to aid in remediation of soil and ground water contaminated with chlorinated solvents.

   b. Number of Class V injection wells: twenty (20) injection wells.

   c. Injected fluid: Potassium hydroxide, sodium hydroxide and Oil Red 26 tracer.

   d. Maximum injection rate per well: 3.0 gallons of liquid/min. (gpm)/well
      Maximum total injection rate: 60.0 gpm

   e. Maximum total injection volume per well: 4,320 gallons of liquid/day/well
      Maximum total injection volume: 86,400 g/day

   f. Maximum daily average injection pressure (at well head): 40 psig.

3. Monitoring and Reporting Requirements.

   a. The Operator shall report to the Underground Injection Control Program of the Division the number and exact location of all Class V injection wells it installs or plugs on a quarterly basis. The reports are to be submitted to the UIC Program in accordance with the reporting schedule stipulated by the Hazardous Waste Management Branch.

   b. The Operator shall submit to the Division for its approval, a detailed schematic diagram and location map on any Class V injection well that is different in construction from the specifications contained in the UIC permit application, no later than 45 days prior to installation of the injection well. The Operator cannot install such a well until it receives approval from the Division.

   c. The Operator shall submit to the UIC Program one (1) copy of any report regarding this site which the Operator is required to submit to the Hazardous Waste Management Branch, or any other program within the Division.

   d. The Operator shall submit to the UIC Program an annual report which will contain the following information.

      1. Status of the injection system operation;

      2. Results of any ground-water sampling and analyses;

      3. Results of any soil sampling and analyses;

      4. An evaluation of the plume movement through the ground-water, if any;

      5. Comparisons of analyses to determine any changes in pollutant concentrations.

      The annual reports will be provided to the UIC Program in accordance with the schedule stipulated by the Hazardous Waste Management Branch.

4. Emergency Situations.

   a. The Operator is to immediately notify the Division of any emergency situation that affects the injection system and describe the remedial activity that the Operator is utilizing to correct the situation.

   b. The Operator is to immediately notify the Division when the emergency situation ceases to exist.

5. The Operator shall grant the Division permission to enter the facility property to conduct inspections of the injection system.

6. The Operator shall maintain a copy of this permit at the facility site.

7. The Operator shall, upon termination of the injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) Class V injection wells at this site, properly plug and abandon all Class V wells constructed on this site in accordance with EPD's *Manual for Groundwater Monitoring* (September 1991) and notify the division within thirty (30) days of such termination and abandonment.

Koflo

Koflo Corporation

309 CARY POINT DRIVE
CARY, IL 60013
(847) 516-3700
FAX 847-516-3724
1-800-STATICS

December 18, 2001

Mr. Peter Yanczak
Geo Cleanse

RE: RFQ

Dear Peter:

In response to your inquiry, I am pleased to submit our quotation for the following Koflo Static Mixer.

We offer a 1" diameter, schedule 40, 304 stainless steel mixer with six (6) mixing elements and a flow-straightening vane. End connections are male NPT threads.

MODEL	1-40-2-6V-2
LENGTH	10 INCHES
PRESSURE LOSS	14.3 PSI @ 18 GPM
PRICE	$260.00 EACH
SHIPMENT	1 DAY
TERMS	NET 30
FOB	CARY, IL

We thank you for this opportunity to quote, and if I can be of any further assistance, please feel free to call me at your convenience.

Sincerely,

KOFLO CORPORATION

Anthony R. Federighi

ARF/si

cc: Ken Yardgus

Georgia Department of Natural Resources
205 Jesse Hill Jr. Drive, S.E., East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
Environmental Protection Division
(404) 656-4713

December 21, 2001

Mr. John R. Garner
Environmental Division
Dept. of Navy
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

RE: Underground Injection Control Permit #089-B, Kings Bay Submarine Base Site 11, Old Camden County Landfill, Kings Bay, Georgia.

Dear Mr. Garner:

Enclosed is the Underground Injection Control (UIC) Permit #089-B for the Kings Bay Submarine Base Site 11, Old Camden Co. Landfill, located at Kings Bay, Georgia. This UIC permit allows the U.S. Navy to utilize injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) injection wells. This permit is issued to assist the U.S. Navy with the remediation of soil and ground water contaminated with chlorinated solvents at this site for up to five (5) years. The UIC permit states two (2) standard conditions and seven (7) additional conditions in the attachment.

If you have any questions about the permit please contact Bijan Rahbar, UIC Coordinator, at (404) 656-3214.

Sincerely,

Harold F. Reheis

Harold F. Reheis
Director

Enclosure

cc: File UIC Permit #089
L. Rogers, EPD-CR
B. Hendricks, EPD-HWMB
S. Ross, CH2MHILL

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

INJECTION WELL OPERATING PERMIT

PERMIT NUMBER: #089-B **DATE ISSUED: December 21, 2001**

FACILITY DATA: **INJECTION WELL TYPE: CLASS V (type 5X26)**

FACILITY: Naval Submarine Base
Site 11, Old Camden Co. Landfill
Kings Bay, GA
Camden County

OPERATOR: Dept. of Navy*
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

LOCATION: Lat: 30° 48' 40.2" N
Long: 81° 34' 18.4" W

EPD ID # GA17009001
HWMB Permit# HW-014(S)(2)

In accordance with the provisions of the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, as amended 2001, this permit is issued for the operation of the herein described injection system. Unless appealed, this permit is effective thirty (30) days after its issuance and is conditioned upon the following:

1) The Permittee's continued compliance with the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, the Georgia Rules for Water Quality Control (Revised) and the Georgia Rules for Safe Drinking Water (Revised); and

2) The Permittee's continued compliance with the Permittee's approved injection operation plan which is part of the approved Corrective Action Plan for this site, along with provisions of officially approved plan amendments, if any.

Additional conditions 1 through 7 are attached hereto.

This permit is issued in accordance with the application received on November 26, 2001. The injection operation plan was approved on December 21, 2001, and is based on the statements and supporting data entered herein or attached thereto, all of which are filed with the Environmental Protection Division of the Georgia Department of Natural Resources and hereby made a part of this permit.

This permit is subject to revocation for noncompliance with aforementioned conditions.

This permit expires on **December 21, 2006,** unless previously terminated.

Harold F. Reheis

Harold F. Reheis, Director, Environmental Protection Division
Georgia Department of Natural Resources

* CH2MHILL, as consultant to Kings Bay Submarine Base, may be contacted regarding technical questions at (904) 777-4812.

INJECTION WELL OPERATING PERMIT
ADDITIONAL CONDITIONS

1. Permit Conditions.

   a. This permit is not transferable until any new operator shall agree in writing to these additional permit conditions. Any new operator also shall provide the Environmental Protection Division (Division) with appropriate documentation that they have adequate financial assurances to plug all existing Class V wells.

   b. If the U.S. Navy (Operator) wishes to continue an activity regulated by this permit after the expiration of the permit, the Operator must apply for and obtain a new permit.

   c. The Operator shall report any instances of noncompliance with permit conditions to the Division in writing within five (5) working days of such noncompliance and shall take all reasonable steps to minimize the impact on the environment resulting from noncompliance with this permit and the Georgia Rules for Underground Injection Control.

   d. The Operator shall notify the Division of any proposed changes to the performance of the water injection system in writing at least thirty (30) days prior to the change.

   e. All reports submitted to the Division shall be signed and stamped by a Georgia Registered Professional Engineer or Professional Geologist.

   f. All analyses shall be performed by a laboratory approved or accredited by EPD in accordance with the Georgia Rules for Commercial Laboratory Accreditation, Chapter 391-3-26.

2. System Parameters.

   a. This permit is issued to the Operator for the purpose of operating an injection system consisting of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer at the above referenced site to aid in remediation of soil and ground water contaminated with chlorinated solvents.

   b. Number of Class V injection wells: twenty (20) injection wells.

   c. Injected fluid: Potassium hydroxide, sodium hydroxide and Oil Red 26 tracer.

   d. Maximum injection rate per well: 3.0 gallons of liquid/min. (gpm)/well
      Maximum total injection rate: 60.0 gpm

   e. Maximum total injection volume per well: 4,320 gallons of liquid/day/well
      Maximum total injection volume: 86,400 g/day

   f. Maximum daily average injection pressure (at well head): 40 psig.

3. Monitoring and Reporting Requirements.

   a. The Operator shall report to the Underground Injection Control Program of the Division the number and exact location of all Class V injection wells it installs or plugs on a quarterly basis. The reports are to be submitted to the UIC Program in accordance with the reporting schedule stipulated by the Hazardous Waste Management Branch.

   b. The Operator shall submit to the Division for its approval, a detailed schematic diagram and location map on any Class V injection well that is different in construction from the specifications contained in the UIC permit application, no later than 45 days prior to installation of the injection well. The Operator cannot install such a well until it receives approval from the Division.

   c. The Operator shall submit to the UIC Program one (1) copy of any report regarding this site which the Operator is required to submit to the Hazardous Waste Management Branch, or any other program within the Division.

   d. The Operator shall submit to the UIC Program an annual report which will contain the following information.

      1. Status of the injection system operation;

      2. Results of any ground-water sampling and analyses;

      3. Results of any soil sampling and analyses;

      4. An evaluation of the plume movement through the ground-water, if any;

      5. Comparisons of analyses to determine any changes in pollutant concentrations.

      The annual reports will be provided to the UIC Program in accordance with the schedule stipulated by the Hazardous Waste Management Branch.

4. Emergency Situations.

   a. The Operator is to immediately notify the Division of any emergency situation that affects the injection system and describe the remedial activity that the Operator is utilizing to correct the situation.

   b. The Operator is to immediately notify the Division when the emergency situation ceases to exist.

5. The Operator shall grant the Division permission to enter the facility property to conduct inspections of the injection system.

6. The Operator shall maintain a copy of this permit at the facility site.

7. The Operator shall, upon termination of the injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) Class V injection wells at this site, properly plug and abandon all Class V wells constructed on this site in accordance with EPD's *Manual for Groundwater Monitoring* (September 1991) and notify the division within thirty (30) days of such termination and abandonment.

Site 11 NSB Kings Bay Injection Schedule

Task Description	Duration	24-Sep-01	1-Oct-01	8-Oct-01	15-Oct-01	22-Oct-01	29-Oct-01	5-Nov-01	12-Nov-01	19-Nov-01	26-Nov-01	3-Dec-01	10-Dec-01	17-Dec-01	24-Dec-01	31-Dec-01	[illegible]-Jan-02	14-Jan-02	[illegible]-Jan-02	[illegible]-Jan-02
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Primary Injection Point Installation	6 days																			
Primary Injection Point Setup	14 days																			
Primary Chemical Oxidation Injection	16 days																			
Soybean Oil Injection Pilot Test	2 days																			
Primary Injection Site Settling	19 days																			
Polish Injection Point Installation*	2 days																			
Polish Injection Point Setup*	9 days																			
Polish Chemical Oxidation Injection*	4 days																			
Polish Injection Site Settling*	20 days																			
Soybean Oil Injection	12 days																			

Notes:

* denotes if necessary.

Days are working days.

MEMORANDUM TO THE FILE
VEGOIL TREATMENT AT SITE 11
19 DEC 01

From: Ken Yargus

Cliff Casey, SDIV engineer, inspected our vegetable oil injection system yesterday. He noted poor mixing of the vegetable oil and lecithin and air entrainment in the mixture.

He spoke to Anthony Federighi at Koflo Corporation, who recommended a different static mixer for better mixing.

Cliff also recommended replacing centrifugal pumps with positive displacement diaphram pumps. Other plumbing modifications will also minimize air entrainment.

The parts to make this modification are on order. Mike Halil, JA Jones, was here this morning, spoke to Cliff, and understands the modification.

We currently have approximately 200 gallons of foamy, stratified, poorly mixed oil in a holding tank. Cliff Casey doesn't want to pump it into an injection well. He would like to dig a small trench upgradient of the site, pour the 200 gallons into it, and let it percolate down into the source area.

I called Billy Hendricks, GA EPD, at 1025 19 Dec 01. He said it would lose air in the valdose zone before it hits the water table. He said to "go ahead and do that".

Kendall Yargus
Ken Yargus

Geo-Cleanse International, Inc.

Phase IV Injection Work Plan
Geo-Cleanse® Treatment Program

Naval Submarine Base Kings Bay
Kings Bay, Georgia

Prepared for:
CH2M Hill Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

September 13, 2001

Geo-Cleanse International, Inc
4 Mark Road, Suite C
Kenilworth, NJ 07033
Tel (908) 206-1250
Fax (908) 206-1251

information@geocleanse.com
www.geocleanse.com

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

Geo-Cleanse International, Inc. (GCI), on behalf of CH2M Hill Constructors, Inc. (CH2M Hill) and J.A. Jones Environmental Services Company (J.A. Jones), has been contracted to perform an in-situ chemical oxidation treatment and vegetable oil injection to address residual volatile organic compounds (VOCs) in groundwater at Site 11, Naval Submarine Base (NSB) Kings Bay, Kings Bay, Georgia. The contracted tasks are to be performed under CH2M Hill's Response Action Contract No. N62467-98-D-0995, Contract Task Order No. 0047 with the Department of the Navy, Southern Division, Naval Facilities Engineering Command. The documents detailing site conditions and upon which the Geo-Cleanse® Treatment Program was designed are:

- CH2M Hill. *Work Plan No. 02, Groundwater Remediation at Site 11, Old Camden County Landfill.* Dated May 2001.
- GCI. *Final Effectiveness Evaluation Report, Geo-Cleanse® Treatment Program, Naval Submarine Base Kings Bay, Site 11, Kings Bay, Georgia*. Dated May 7, 1999.
- GCI. *Final Effectiveness Evaluation Report, Geo-Cleanse® Treatment Program, Phase III, Naval Submarine Base Kings Bay, Site 11, Kings Bay, Georgia*. Dated July 24, 2000.
- Chapelle, F. H., and Bradley, P. M. 1999. Selecting remediation goals by assessing the natural attenuation capacity of groundwater systems. *Bioremediation Journal*, v. 2, p. 227-238.
- Leeth, D. C. 1999. Hydrogeology of the Surficial Aquifer in the Vicinity of a Former Landfill, Naval Submarine Base Kings Bay, Camden County, Georgia. *U.S. Geological Survey, Water-Resources Investigations Report 98-4246.*

Based upon review of these documents, its understanding of the geologic and hydrogeologic conditions of the affected areas, the chemical properties of the VOCs reported present at the site, and previous experience with the Geo-Cleanse® Process at Site 11, GCI believes that in-situ chemical oxidation offers an appropriate remedial approach for Site 11.

Previous Geo-Cleanse® Treatments were conducted at Site 11 were conducted in three phases between August 1998 and April 2000. During Phase I, GCI was tasked to treat known areas of contamination in the 30-40 ft depth interval assumed to be the plume origin, in order to control future off-post migration of VOC contamination. After the Phase I injection was concluded in February

1999, injector location I-14 (located on the upgradient margin of the treatment area) continued to yield high VOC concentrations. The primary VOC detected was tetrachloroethene (PCE). The small area of rebound indicated the potential presence of a source within shallower depths at the site that were not treated in previous mobilizations. For Phase II, GCI was tasked to treat previously undetected contamination in the area near I-14 and downgradient areas outside of the Phase I treatment area, also at the 30-40 ft depth interval. Rebound of VOC contaminants at I-14 occurred after treatment was concluded in July 1999, although remedial goals were achieved elsewhere at the site. An excavation of the suspected source area near I-14 was conducted to determine if a shallow source area might exist. During the excavation, several containers holding paint- or sludge-type wastes containing PCE were discovered and removed. A Phase III injection was conducted between January and April 2000 to address remaining VOCs in the area of injector I-14 at Site 11. VOC concentrations again rebounded, this time in the area near injector I-60 (located southeast of I-14). The spatial pattern of the rebound, the contaminants detected, and their concentration, suggested the presence of a residual source area at depths of greater than about 40 feet below grade (deeper than the treatment area) in the area directly around I-60. After successful remediation of most of the Site 11 area and contraction of the source area to a single location, further treatment in the I-60 area was warranted after delineation at levels deeper than I-60 (39 feet). CH2M Hill completed additional delineation in November 2000 and January 2001.

The remainder of this work plan is organized as follows:

Section 1, Introduction (this section)— Further in Section 1 is a description of the geologic and hydrogeologic setting, nature and extent of current VOC contamination (following the Phase III treatment), and treatment goals.

Section 2, Summary of the Geo-Cleanse® Process— Describes the basic chemical reactions involved, reagents to be injected, and fate of reagents in the subsurface.

Section 3, Implementation of the Geo-Cleanse® Process— Describes design elements for the Geo-Cleanse® Treatment including monitoring, injector design and installation, and sequence of events.

Section 4, Vegetable Oil Injection— Describes the plan for edible oil injection to provide a persistent carbon source.

Section 5, Confirmatory Sampling— Refers to a separate CH2M Hill work plan for post-treatment confirmatory sampling.

Section 6, Reporting— Describes types and management of field notes to be collected and other records.

Section 7, References— Presents a bibliographic list of references cited in the text.

1.1. GEOLOGIC AND HYDROGEOLOGIC SETTING

The shallow soils in the region of NSB Kings Bay are typified as fine sands interbedded with silty and/or clayey fine sands and some medium sands. An unconfined surficial aquifer is approximately 80 ft thick in the vicinity of Site 11 (Leeth, 1999). Within the Site 11 area, the lithology of the surficial zone is described as gray to light brown, fine to medium quartz sand with intermittent gray clay lenses, extending to a depth of at least 50 ft below grade. Depth to water varies seasonally from approximately 6 to 10 ft below grade. Hydraulic conductivity is reported as 30 ft/day. Flow direction is generally northwest.

1.2. NATURE AND EXTENT OF CONTAMINATION

CH2M Hill conducted additional site investigations between November 2000 and January 2001 that were summarized in their work plan (*Work Plan No. 02, Groundwater Remediation at Site 11, Old Camden County Landfill*). In summary, CH2M Hill utilized a membrane interface probe (MIP)/Geoprobe rig to provide horizontal and vertical characterization of the groundwater VOC plume in the initial field effort (November 6-12, 2000). Boring locations were placed on a 10-ft grid pattern surrounding I-60. The MIP data were also utilized to identify zones from which discrete groundwater samples were collected for VOC analysis. Based upon the initial groundwater analytical results, the horizontal spacing was increased to 50 ft to determine the "clean" boundary. The contaminated interval was determined to extend from approximately 44 to 48 ft below grade, however additional sampling was required to complete the horizontal delineation. The additional sampling was conducted in January 2001. Nine Geoprobe borings were advanced in a 25-foot grid pattern, with samples collected at depths between 36 and 52 ft below grade. Injector I-60 was also sampled on February 7, 2001.

Analytical results for PCE, trichloroethene (TCE), cis-1,2-dichloroethene (CIS), trans-1,2-dichloroethene (TRANS), and vinyl chloride (VC) (cumulatively referred to as total chlorinated ethylenes, or TCLE) are summarized in Figure 1-1. PCE was the predominant VOC detected, at concentrations up to 54,000 ug/L. TCE was detected at up to 430 ug/L, CIS at 900 ug/L, TRANS at 8.4 ug/L, and VC at 53 ug/L. The highest VOC concentrations were detected primarily in the 44 to 48 ft depth interval, although elevated concentrations were detected at shallow intervals. VOCs were detected, but their concentrations were much lower, at depth intervals between 48 and 52 ft below grade.

1.3. REMEDIAL DESIGN GOALS

Site investigations conducted by CH2M Hill have identified a zone extending primarily from 44 to 48 feet below grade near the location of injector I-60 as the source area of the residual groundwater VOC plume. Accordingly, the overall objective is to reduce VOC concentrations to ensure that natural attenuation will be an effective remedy for remaining VOCs in groundwater migrating off base. The following tasks will be completed to achieve this overall objective:

- Conduct an in-situ Fenton's reagent chemical oxidation injection with the Geo-Cleanse® Process in the I-60 area, primarily targeting PCE in the 40-50 ft depth interval.
- Following stabilization of the subsurface after the Geo-Cleanse® Treatment, vegetable oil will be injected to provide a carbon source to enhance natural microbial degradation of residual VOCs.

2. SUMMARY OF THE GEO-CLEANSE® PROCESS

The Geo-Cleanse® Process is a patented technology to simultaneously inject hydrogen peroxide and ferrous iron catalyst solutions under pressure to the subsurface in order to destroy organic contaminants in soil and groundwater. U.S. patents 5,525,008 and 5,611,642 protect the technology. The Geo-Cleanse® Process delivers a calculated charge of hydrogen peroxide and catalyst to the contaminated region via specially designed injection equipment consisting of mixing heads and subsurface injectors. The injection methodology and equipment are the keys to the Geo-Cleanse® Process. The chemistry involved is based upon Fenton's reagent. Fenton's reagent oxidizes organic contaminants to carbon dioxide and water, plus chloride (in the case of chlorinated aliphatic compounds). The basics of Fenton's reagent chemistry and application to site-specific contaminants are described in the following sections.

2.1. FENTON'S REAGENT CHEMISTRY

Fenton's reagent is a mixture of hydrogen peroxide (H_2O_2) and ferrous iron (Fe^{+2}) catalyst. The ability of mixtures of H_2O_2 and Fe^{+2} to destroy organic compounds was first recognized by Fenton (1894). Haber and Weiss (1934) later identified the active oxidizing agent as a hydroxyl free radical. The basic radical-producing mechanism is characterized as:

$$H_2O_2 + Fe^{+2} \rightarrow OH\cdot + OH^- + Fe^{+3} \qquad (1)$$

where $OH\cdot$ is hydroxyl free radical, OH^- is hydroxyl ion, and Fe^{+3} is ferric iron. Fenton's reagent chemistry is complex, involving a number of additional reactions producing both oxidants and reductants that contribute to contaminant destruction (e.g., Watts et al., 1999a):

$$OH\cdot + Fe^{+2} \rightarrow OH^- + Fe^{+3} \qquad (2)$$

$$Fe^{+3} + H_2O_2 \rightarrow H^+ + HO_2\cdot + Fe^{+2} \qquad (3)$$

$$Fe^{+2} + HO_2\cdot \rightarrow Fe^{+3} + HO_2^- \qquad (4)$$

$$Fe^{+3} + HO_2\cdot \rightarrow Fe^{+2} + O_2 + H^+ \qquad (5)$$

$$OH\cdot + H_2O_2 \rightarrow H_2O + HO_2\cdot \qquad (6)$$

where $HO_2\cdot$ is hydroperoxyl radical, HO_2^- is hydroperoxyl anion, O_2 is molecular oxygen, H^+ is hydronium ion, and H_2O is water. Additional reactions occur with organic compounds. The suite of reactions associated with Fenton's reagent is complex, but very effective at destroying many organic compounds dissolved in groundwater, sorbed to soil particles, or existing as non-aqueous phase liquids in subsurface environments. Fenton's reagent is generally most efficient under acidic pH conditions (pH ~3) because oxidation of iron (from Fe^{+2} to Fe^{+3}) by other reactions is minimized, hydrous ferric iron oxides are less likely to precipitate (removing iron from solution), and bicarbonate (which competes with the organic compounds for the hydroxyl radical) is absent. However, an effective (although not chemically optimal) Fenton's reagent system can be established at a pH greater than 6 (e.g., Watts et al., 1999b; Lindsey and Tarr, 2000).

The hydroxyl free radical generated by Fenton's reagent is a powerful, non-selective oxidant. Oxidation of an organic compound by Fenton's reagent is a rapid and exothermic (heat-producing) reaction. Second order rate constants for reactions of hydroxyl free radical with common environmental pollutants are typically in the range of 10^7 to 10^{10} per molar per second ($M^{-1}s^{-1}$) (e.g., Buxton et al., 1988; Haag and Yao, 1992). Complete (100%) mineralization is generally complete in minutes. Intermediate compounds are primarily naturally occurring carboxylic acids. Final products are generally carbon dioxide (CO_2) and H_2O, plus other constituent compounds such as chloride (Cl^-) or nitrate ions. None of the injected reagents pose an environmental hazard. Unconsumed H_2O_2 naturally degrades to oxygen and water after injection.

The primary VOCs present at Site 11 is PCE. Fenton's reagent oxidizes chlorinated aliphatic compounds such as PCE and its natural degradation products to substituent CO_2, H_2O, and Cl^-, via an oxidation pathway that involves carboxylic acids. The oxidation pathway is not a dehalogenation process like natural biodegradation, and additional TCE, CIS, or VC are not produced by Fenton's reagent oxidation of PCE. Reported rate constants for reaction of OH^- with PCE range from 4.0-4.3 x 10^9 $M^{-1}s^{-1}$ (Buxton et al., 1988), indicating an extremely rapid reaction. Oxidation of PCE ($Cl_2C{=}CHCl$) by Fenton's reagent produces dichloroacetic acid ($CHCl_2COOH$) as the only significant intermediate product, which is in turn oxidized to formic acid (HCOOH) and finally to H_2O, CO_2, and Cl^- (Figure 2-1):

$$Cl_2C{=}CCl_2 + OH^- + H_2O \rightarrow CHCl_2COOH + H^+ + 2Cl^- \qquad (7)$$

$$CHCl_2COOH + 2OH^{\cdot} \rightarrow HCOOH + 2H^+ + 2Cl^- + CO_2 \quad (8)$$

$$HCOOH + 2OH^{\cdot} \rightarrow 2H_2O + CO_2 \quad (9)$$

Fenton's reagent effectively and completely oxidizes PCE and its related compounds to stoichiometric quantities of H_2O, CO_2, and Cl^- in soil and groundwater under laboratory-simulated conditions (e.g., Ravikumar and Gurol, 1994; Gates and Siegrist, 1995) and in GCI field experience (e.g., Bryant and Wilson, 1998, 1999; Levin et al., 2000; Maughon et al., 2000).

2.2. GEO-CLEANSE INJECTION EQUIPMENT

GCI will stage a mobile treatment unit at the site. Hydrogen peroxide is staged at the site in a stainless steel, manufacturer-supplied, 4,500-gallon tanker designed for interstate transportation and storage of concentrated hydrogen peroxide solution. Additional services required at the site are water and power (provided by a 60 kilowatt generator).

The GCI mobile treatment unit (Figure 2-2) includes tanks, pumps, gauges and flow control valves to deliver reagents safely and effectively to mixing heads installed on the injectors. Safety features include redundant check valves to control reagent flow, construction materials to withstand the reagents and pressures encountered, acid spill kit, eyewashes and safety showers (full details of safety features are included in a separate document, the Site-Specific Health and Safety Plan). Reagent injection to the subsurface is conducted via specially designed mixing heads attached to the riser pipe of the injector (Figure 2-3). The mixing heads are designed with redundant safety features including check valves, pressure gauges and flow-control ball valves and are constructed of stainless steel to withstand the reagents.

3. IMPLEMENTATION OF THE GEO-CLEANSE® PROCESS

3.1. PRE-INJECTION GROUNDWATER QUALITY MONITORING

During injector installation, groundwater samples will be collected from monitoring wells within and adjacent to the treatment area for groundwater quality measurements. The parameters to be measured are groundwater pH, alkalinity, dissolved chloride, and dissolved iron. These parameters are relevant to Geo-Cleanse® project design and implementation. The measurements are performed with field test kits. The test kits used, resolution and range are as follows.

pH: A Hach test kit model 17-F is used. The test is a colorimetric method using bromothymol blue as an indicator. The range is 5.5 to 8.5 with resolution of ±0.1.

Alkalinity: A Hach test kit model AL-AP/MG-L is used. The test is a titration method using a sulfuric acid reagent. The range is 0 to 100 mg/L (as $CaCO_3$) with resolution of ±5 mg/L, or 20 to 400 mg/L with resolution of ±20 mg/L.

Dissolved Chloride: A Hach test kit model 8-P is used. The test is a titration method using a silver nitrate indicator. The range is 0 to 100 mg/L (as Cl^-) with resolution of ±5 mg/L, or 20 to 400 mg/L (as Cl^-) with resolution of ±20 mg/L.

Dissolved Iron: A Hach test kit model IR-18B is used. The test is a colorimetic method using phenanthroline reagent. The range is 0 to 10 mg/L with resolution of ±0.2 mg/L.

Additional test kits may be used as dictated by site-specific conditions.

3.2. INJECTOR INSTALLATION

3.2.1. Treatment Area

The targeted treatment area is in the I-60 area (Figure 3-1). Based upon site delineation data provided by CH2M Hill (Figure 1-1), a total of 20 injectors will be installed.

3.2.2. Injector Construction

An example injector construction detail is provided in Figure 3-2. The Phase IV injectors will be constructed with stainless steel, 0.010-slot screens and Schedule 80 steel riser pipe and couplings. The pipe and screen diameters are 1.25 inches. A 3-ft screen length will be used. The injectors will be installed with direct-push technology by advancing a 3.25-inch outside diameter / 2.5-inch inside diameter casing with a disposable tip. Once the target depth is achieved, the injector will then be placed inside the casing. The casing will then be packed with filter sand extending 1 ft above the top of the screen. The casing will be systematically extracted as completion materials are added to ensure that materials do not bridge within the auger. Next, a 1-ft layer of fine (20/60 grade) sand will be added to prohibit grout infiltration of the filter pack sand. The injectors will then be sealed to grade with a cement/bentonite grout mix. The grout mix will be added by tremie pipe to ensure complete displacement of water within the augers and competent distribution. The grout mix will consist of Portland Type I cement, bentonite powder and water in the ratio of 94 lbs Portland Type I cement : 5 lbs bentonite powder : 7.5 gal water. The target mixture weight should be approximately 14.5 lbs per gallon. The gout will be allowed to settle after completion and additional grout will be added as necessary to fill the borehole. The surface completion will be a "stickup" design (Figure 3-2).

3.2.3. Investigation Derived Wastes Management

Investigation-derived wastes will be drummed, labeled, and staged onsite. CH2M Hill will characterize and properly dispose any hazardous or potentially hazardous wastes.

3.3. TREATMENT PROGRAM PROCEDURES

3.3.1. Sequence of Events

The treatment program phases include mobilization, treatment and demobilization. Mobilization normally requires 1 day of onsite activities. Tasks required during mobilization include positioning the GCI mobile treatment unit, hydrogen peroxide tanker and generator; establishing an exclusion zone; constructing the safety shower and hydrogen peroxide transfer station; connecting the treatment unit to the water source and power generator; and leak- and safety-checking all hosing and fittings. A health and safety meeting with all personnel is normally conducted on the first day.

Leak and pressure testing of hoses and other equipment is conducted on the first day using tap water available to the site. The testing is completed by partially filling each reagent tank with water, pressuring the system to operating levels, and injecting a small quantity of water through each injection head prior to use with other reagents. Pressures that may be encountered (and at which the system will be tested) are anticipated to range up to 60 pounds per square inch, established via the same double-diaphragm pumps utilized during reagent injection. All hoses, fittings, and piping will be further monitored continuously for leaks during injection. Any identified leaks will be repaired immediately, after system depressurization. Depressurization is conducted via specially designed air and liquid venting ports.

Each day of injection typically begins with a tailgate health and safety meeting. Injection of catalyst and hydrogen peroxide solutions is then conducted through the course of the day, with monitoring as prescribed in Section 3.3.4 (below). Normal workdays are 8 hours. At the end of each day, the mixing heads and lines will be returned to the mobile treatment unit, the hydrogen peroxide tanker will be locked, generator turned off and the site secured for the night.

Demobilization activities include clearing the site of debris resulting from injection activities, dismantling the hydrogen peroxide transfer station and safety shower, disconnecting from water and power supplies, and securing the mobile treatment unit, hydrogen peroxide tanker and generator for mobilization. Demobilization activities typically require a half-day of onsite activities.

3.3.2. Duration of Treatment and Volume of Reagents

The primary treatment portion of the Phase IV of the Geo-Cleanse® Treatment Program at Kings Bay Site 11 is anticipated to require approximately 6 days for drilling and 16 days for injection, including mobilization, injection and demobilization. An estimated 96,000 lbs (9,600 gal) of 50% hydrogen peroxide and a similar volume of catalyst solution are anticipated for the initial treatment. A secondary polishing injection may be conducted if necessary, incorporating approximately 2 additional days of drilling, 4 days of injection, 20,000 lbs (2,000 gal) of 50% hydrogen peroxide and similar volume of catalyst solution.

3.3.3. Reagents

The reagents used in the Geo-Cleanse® Process, and the purpose, injected concentrations and fate of the reagents are summarized as follows.

Hydrogen peroxide: 50% technical grade, used as oxidizing agent. Injected into groundwater and soils with resultant concentrations to groundwater of less than 1%. This concentration quickly falls to less than 25 ppm within several hours following injection. The hydrogen peroxide is typically consumed completely within 3 days.

Ferrous sulfate: 100 ppm aqueous solution of food grade iron reagent, used as catalyst. This concentration is diluted in groundwater to less than 10 ppm. The ferrous iron is oxidized in the subsurface to ferric iron and precipitates as an iron oxide or iron hydroxide.

Sulfuric acid: 66° technical grade, diluted prior to injection in water to a pH of approximately 4. This is used in the catalyst solution to inhibit oxidation of ferrous iron to ferric iron in the catalyst solution prior to injection, and to adjust pH of the groundwater to the optimal range for Fenton's reagent (<6). Groundwater pH will typically return to ambient background conditions within a few days of injection. This reagent may not be utilized depending upon site-specific conditions. Approximately 15 gallons of sulfuric acid may be staged onsite (depending upon site-specific conditions).

Phosphoric acid: 85% technical grade, diluted prior to injection in water to a pH of approximately 4. This is used in the catalyst solution to inhibit oxidation of ferrous iron to ferric iron in the catalyst solution prior to injection, and to adjust pH of the groundwater to the optimal range for Fenton's reagent (<6). Groundwater pH will return to ambient background conditions within a few days of injection, or potassium hydroxide may be utilized to speed pH recovery. This reagent may not be utilized depending upon site-specific conditions. Approximately 15 gallons of phosphoric acid may be staged onsite (depending upon site-specific conditions).

Calcium phosphate: 10 ppm aqueous solution of food grade reagent, used to stabilize the Fenton's reagent. This concentration is diluted in groundwater to less than 1 ppm. The calcium remains dissolved in solution and the phosphate either precipitates or is utilized as a nutrient for biological activity. This reagent may not be utilized depending upon site-specific conditions.

Potassium hydroxide: 45% technical grade, diluted prior to injection in water to a pH of approximately 10. This is used during a post-treatment polishing phase to adjust pH of the groundwater back to a near-neutral range. This reagent may not be utilized depending upon site-specific conditions.

3.3.4. Monitoring Parameters

Several field parameters are monitored during injection to ensure that appropriate subsurface conditions exist, an efficient reaction is occurring, and to monitor the reaction progress. Parameters that are monitored include both groundwater quality and liberated gas measurements. At least 2 rounds of groundwater samples are collected and gas measurements are conducted at approximately 2-hour intervals each day throughout the treatment. Additional analyses may be performed as dictated by site conditions, but not at prescribed time intervals. Field meters are calibrated daily according to manufacturer specifications. Parameters that are monitored, and the purpose, method, resolution and range are as follows.

Carbon dioxide: Oxidation of organic compounds yields carbon dioxide (see above chemical equations), which is liberated from the subsurface through adjacent injectors and monitoring wells. Carbon dioxide production is a sensitive measure of the efficiency and progress of the treatment. At sites impacted by chlorinated aliphatic compounds, carbon dioxide production typically reaches maximum levels of approximately 7 to 10% in the early stages (first 2 to 4 days) of injection then decrease asymptotically to zero over the course of the treatment as the subsurface organic contaminants are destroyed. Carbon dioxide concentration is measured in the injectors and monitoring wells within and adjacent to the treatment area. The measurement is performed with a GasTech GT series carbon dioxide/oxygen meter. The meter uses a non-dispersive infrared absorbance detection method. Resolution is ±0.1% and range is 0 to 20%.

Oxygen: Reaction of hydroxyl free radicals with hydrogen peroxide, other radicals, or other non-organic compounds produces oxygen. Oxygen is liberated from the subsurface through adjacent injectors and monitoring wells. At sites impacted by chlorinated aliphatic compounds, oxygen production is typically low in the first few days of injection (approximately 10 to 15%) then increases to >30% over the course of the treatment as the subsurface organic contaminants are destroyed. Oxygen concentration is measured in injectors and monitoring wells within and adjacent to the treatment area. The measurement is performed with a GasTech GT series carbon dioxide/oxygen meter. The meter uses an electrochemical detection method. Resolution is ±0.1% and range is 0 to 30%.

Groundwater Quality: Groundwater pH, alkalinity and dissolved iron concentration are measured to ensure that appropriate conditions exist in the subsurface for efficient oxidation via Fenton's reagent. Dissolved chloride is produced from oxidation of chlorinated compounds in some cases also provides a sensitive measure of reaction progress. Hydrogen peroxide concentration is also measured to ensure that reagents are distributed throughout the treatment area. Hydrogen peroxide is measured with disposable colorimetric test strips (e.g., Merckoquant 1.10081.0001 strips) with a measurable range of 0 to 100 ppm. Water samples are bailed from monitoring wells within and adjacent to the treatment area and analyzed with the test kits described in Section 3.1 (above).

Additional measurements that may be performed on a site-specific basis include (but are not restricted to) organic vapors (by photoionization detector [PID]) and other groundwater quality measurements including hardness and dissolved nitrate/nitrite concentration.

4. VEGETABLE OIL INJECTION

Natural microbial degradation of PCE occurs most readily under anaerobic conditions by reductive dechlorination. The presence of an electron donor is often a limiting factor in the rate of contaminant biodegradation. A variety of supplemental electron donors have been evaluated, including materials such as HRC®, lactate, and edible (vegetable) oils. Vegetable oil is an inexpensive, unregulated, food-grade carbon source. Furthermore, vegetable oil is a nonaqueous phase liquid, so it dissolves slowly in water and may provide a viable carbon source (electron donor) for a long period of time. Recent pilot tests of vegetable (soybean) oil injection at Cape Canaveral, Florida have yielded promising initial results (Boulicault et al., 2000).

Vegetable oil injection will be conducted after conclusion of the Fenton's reagent treatment at the site. Following the Geo-Cleanse® Treatment, approximately one month will be allowed for residual hydrogen peroxide to degrade and pH to recover to ambient conditions. An injection of mild potassium hydroxide may be conducted to help pH recovery (see Section 3). Vegetable oil injection will not be conducted until residual hydrogen peroxide is degraded and pH is no lower than 5.

4.1. PRE-INJECTION GROUNDWATER QUALITY MONITORING

During injector installation for the Fenton's reagent treatment (Section 3.2), soil samples will be collected by CH2M Hill from injection wells within and adjacent to the treatment area for analysis of total organic carbon. Soil sample analyses are described in CH2M Hill's separate work plan (*Work Plan No. 02, Groundwater Remediation at Site 11, Old Camden County Landfill*).

4.2. INJECTION PROCEDURES

4.2.1. Treatment Area

The targeted primary treatment area is in the I-60 area (Figure 3-1). Based upon site delineation data provided by CH2M Hill (Figure 1-1), a total of 39 temporary injectors will be installed. In addition, other permanently installed Fenton's reagent injection points (from previous Geo-Cleanse® Treatments at the site) will also be utilized as vegetable oil injection points to provide more complete coverage of the site.

4.2.2. Injection Volume and Reagents

The vegetable oil will be amended with Lecithin, a food-grade emulsifier that reduces the tendency for the oil to separate from water and thus improves reagent distribution. The oil/lecithin mix will be further diluted with water prior to injection. A volume of 150 to 250 gallons (1,200 to 2,000 lbs) of vegetable oil is targeted for injection at each of the temporary injection points (the final volumes will depend upon the ability of the formation to accept the vegetable oil mix). This volume will be increased by addition of 7.5% Lecithin by weight (90 to 150 lbs), thus the total oil/lecithin mass per point is targeted to range from 1,290 to 2,150 lbs. The oil/lecithin mixture will be further diluted with water, so that the oil/lecithin mixture constitutes approximately 35% by mass of the oil/lecithin/water mixture. Thus the totals per injector will range from 3,690 to 6,140 lbs. Assuming a density of approximately 8.4 lbs/gallon, the target mass corresponds to approximately 440 to 730 gallons of oil/lecithin/water mix will be injected per point. In the event that the targeted 39 temporary injection points do not accept the targeted volumes (or to deliver any excess reagent), the adjacent, permanently installed injection points (utilized for the Fenton's reagent injections) will also be utilized as vegetable oil injection points.

Two tracers will be added to the vegetable oil/lecithin/water mix. The first is bromide, a water-soluble tracer, to track distribution of the dilution water. The second is Oil Red O, an oil-soluble dye to analytically trace distribution of the soybean oil.

4.2.3. Temporary Injector Construction and Injection Procedure

Temporary injectors will be installed by advancing a casing to the target depth of 52 ft by direct-push technology. Once the target treatment depth is achieved, the casing will be pulled back to expose a 2-ft injection screen. The vegetable oil will be injected using a grout pump, with a target injection volume of 44 to 73 gallons per 2-ft interval. After injection of the target volume in each injection interval, the screen will be raised in 2-ft lifts for injection in the next interval. The treatment interval will be from approximately 32 to 52 ft below grade (20-ft thickness). The borehole will be abandoned by filling with Portland cement grout after completing each point.

4.2.4. Sequence of Events

The treatment program phases include mobilization, treatment and demobilization. Mobilization is anticipated to require less than ½ day of onsite activities. Tasks required during mobilization include establishing an exclusion zone, identifying the location of each injection point, setting up the grout pump and positioning the direct-push drilling rig for the first drilling location. A health and safety meeting with all personnel is normally conducted on the first day. Each day of injection typically begins with a tailgate health and safety meeting, and then injection will continue through the course of the day. Normal workdays are 8 hours. Approximately 12 days are scheduled to complete the vegetable oil injection activities.

During the Fenton's reagent injection phase (Section 3), a pilot vegetable oil injection test will be conducted with at least one of the existing, downgradient injection wells. The objective of this test is to preliminarily assess the ability of the formation to accept the oil reagent mix.

Demobilization activities include clearing the site of debris resulting from injection activities, dismantling the grout pump, cleaning and packing the direct-push drill rig, and securing the site. Demobilization typically requires a half-day of onsite activities.

4.2.5. Investigation Derived Wastes Management

No soil cuttings are anticipated from the direct-push installation of the temporary injection points. The reagents are food-grade materials. Thus no hazardous investigation-derived wastes are anticipated, and non-hazardous wastes (vegetable oil containers, etc.) will be disposed of in municipal trash.

5. CONFIRMATORY SAMPLING

CH2M Hill will conduct post-injection confirmatory sampling according to their separate work plan.

6. REPORTING

Verbal updates will be provided to the client during the course of the treatment program. All field notes will be recorded in a permanent field notebook. Types of information recorded in the field notebook include date, personnel onsite, health and safety issues or discussions, injection locations, quantities, rates, and pressures, all monitoring data, and other pertinent observations of the GCI field crew. Photographs will be permanently archived with the field notebook.

At the conclusion of the injection program and upon receipt of post-injection confirmatory sampling results, a report will be prepared by GCI describing the observations, activities, and results of the injection. This report will be submitted to CH2M Hill.

7. GEO-CLEANSE PROJECT PERSONNEL

Key GCI personnel and project lines of authority are identified in an organizational chart in Figure 7-1. The key positions and responsibilities are as follows.

Project Manager: The GCI Project Manager is the lead subcontractor oversight and supervises all administrative and technical aspects of the project for GCI. The Project Manager is responsible for day-to-day management of project staff and resources, oversight and coordination of field teams, and approval of procedural plans, operating procedures, and reports, including preparation of this work plan. The Project Manager will serve as the primary point of contact for GCI, and will interface with CH2M Hill and other subcontractors.

Project Geologist: The Project Geologist is responsible for conducting geological field work, including injector installation, soil and groundwater sampling that may be conducted by GCI during injector installation, and assisting the Project Manager in review of geological and hydrogeological data.

Field Team Leaders: The Field Team Leader is responsible for ensuring that the work plan and procedures are properly implemented at each site, that field personnel under their supervision produce and accurately record field data and observations, and that day-to-day field operations and project goals are efficiently and accurately completed. The Field Team Leader will also coordinate with CH2M Hill field personnel during field operations. The Field Team Leader will bring any unusual observations or analytical problem to the immediate attention of the Project Manager.

Field Team Members: Each field team will consist of a crew of one to three Field Team Members in addition to the Field Team Leader. Field Team Members perform the required field procedures, including process monitoring and injection operations. Field Team Members must document all observations, measurements, calculations, calibrations, construction details, and other information in the appropriate notebook(s). Field Team Members must also bring any unusual observations or analytical problems to the immediate attention of his/her Field Team Leader for evaluation and transmittal to the Project Manager.

Other Project Personnel: A Project Coordinator is assigned to assist the Project Manager. Tasks assigned to the Project Coordinator include arranging for reagent and supply deliveries; coordinating personnel schedules; interfacing between field and office personnel; assisting with deliverable preparation; and similar duties. A Project Administrator is also assigned to assist the Project Manager. Tasks assigned to the Project Administrator include tracking personnel timesheets and project expenses; management of subcontracts; prime contract negotiations and invoicing; and other administrative responsibilities.

8. REFERENCES

Boulicault, K. J., Hinchee, R. E., Wiedemeier, T. H., Hoxworth, S. W., and Swingle, T. P. 2000. Vegoil: A novel approach for stimulating reductive dechlorination. Pages 1-8 *in* Wickramanayake, G. B., Gavaskar, A. R., Alleman, B. C., and Magar, V. S., *Bioremediation and Phytoremediation of Chlorinated and Recalcitrant Compounds*. The Second International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 22-25, 2000 (Volume C2-4).

Bryant, J.D., and Wilson, J.T. 1998. Rapid delivery system completes oxidation picture. *Soil & Groundwater Cleanup*, August-September 1998, p. 6-11.

Chapelle, F. H., and Bradley, P. M. 1999. Selecting remediation goals by assessing the natural attenuation capacity of groundwater systems. *Bioremediation Journal*, v. 2, p. 227-238.

Fenton, H.J.H. 1894. Oxidation of tartaric acid in presence of iron. *Journal of the Chemical Society*, v. 65, p. 899-910.

Gates, D.D., and Siegrist, R.L. 1995. In-situ oxidation of trichloroethylene using hydrogen peroxide. *Journal of Environmental Engineering*, v. 121, p. 639-644.

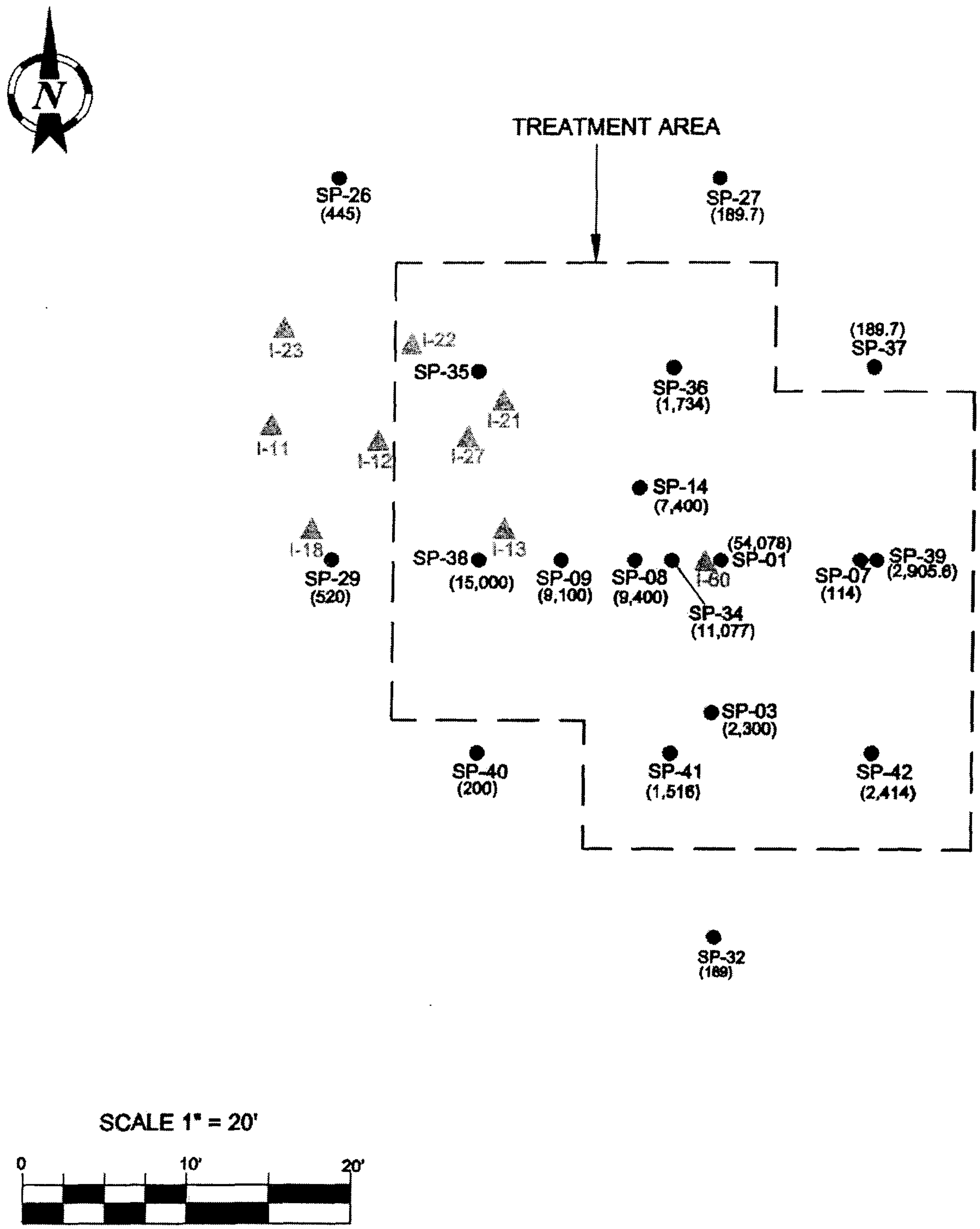
Haag, W.R., and Yao, C.C.D. 1992. Rate constants for reaction of hydroxyl radicals with several drinking water contaminants. *Environmental Science and Technology*, v. 26, p. 1005-1013.

Haber,F., and Weiss, J. 1934. The catalytic decomposition of hydrogen peroxide by iron salts. *Proceedings of the Royal Society of London, Series A*, v. 147, p. 332-351.

Leeth, D. C. 1999. *Hydrogeology of the Surficial Aquifer in the Vicinity of a Former Landfill, Naval Submarine Base Kings Bay, Camden County, Georgia*. U.S. Geological Survey, Water-Resources Investigations Report 98-4246.

Leung, S.W., Watts, R.J., and Miller, G.C. 1992. Degradation of perchloroethylene by Fenton's reagent: Speciation and pathway. *Journal of Environmental Quality*, v. 21, p. 377-381.

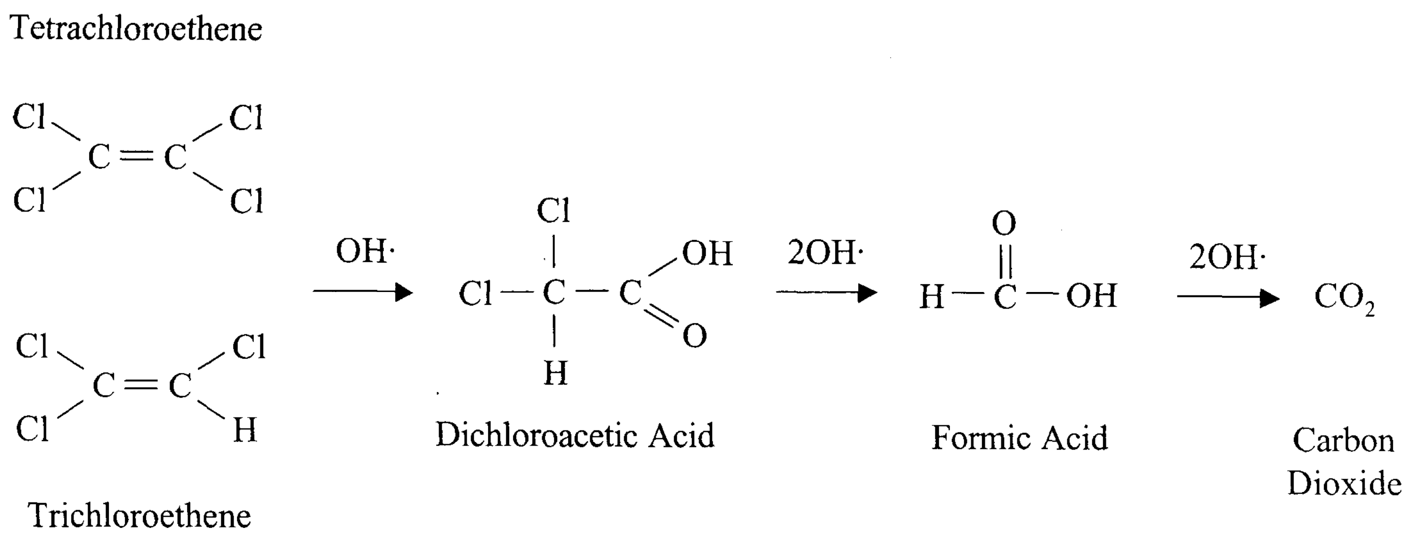
Ravikumar, J.X., and Gurol, M.D. 1994. Chemical oxidation of chlorinated organics by hydrogen peroxide in the presence of sand. *Environmental Science and Technology*, v. 28, p. 394-400.



LEGEND

I-18	INJECTION WELL LOCATION
SP-29 (520)	SAMPLE POINT LOCATION (WITH TCLE CONCENTRATION IN PPB)

FIGURE 1-1	PROPOSED CHEMICAL OXIDATION TREATMENT AREA	
NSB KINGS BAY, GEORGIA		DATE: 08/20/01
		DESIGNED: AP
Geo-Cleanse® INTERNATIONAL, INC.		CHECKED: DB
		APPROVED: DB
		DRAWN:AP
SOURCE: CH2MHILL		



References: Leung et al., 1992; Sato et al., 1993

FIGURE 2-1. Fenton's Reagent Oxidation Pathways for Tetrachloroethene and Trichloroethene

Geo-Cleanse®
International, Inc.

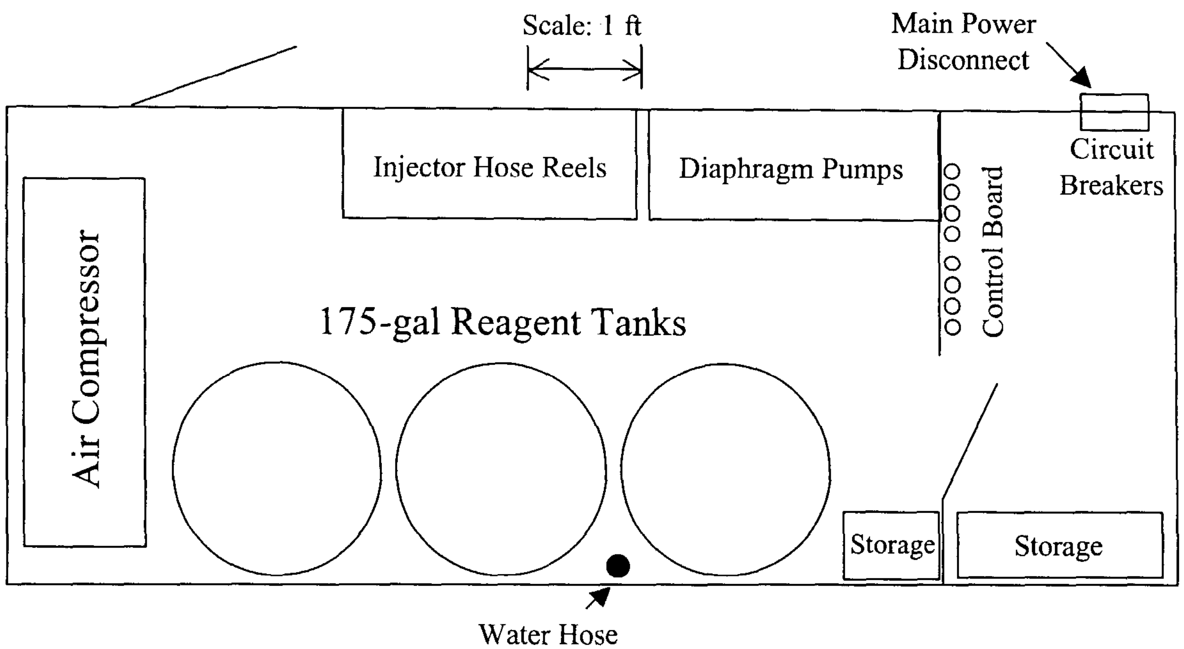


FIGURE 2-2. Schematic of Geo-Cleanse® Mobile Treatment Unit

Geo-Cleanse® International, Inc.

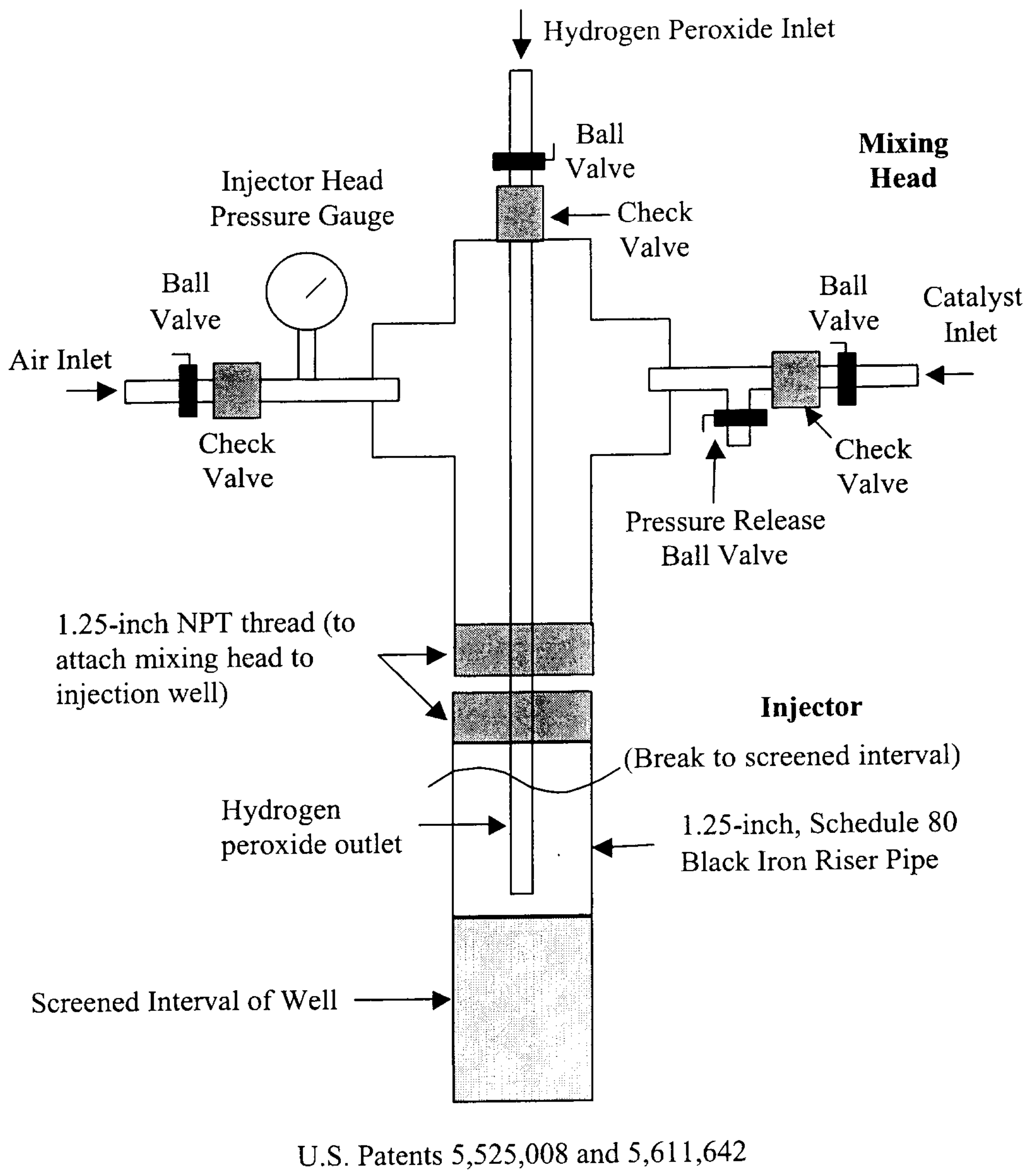
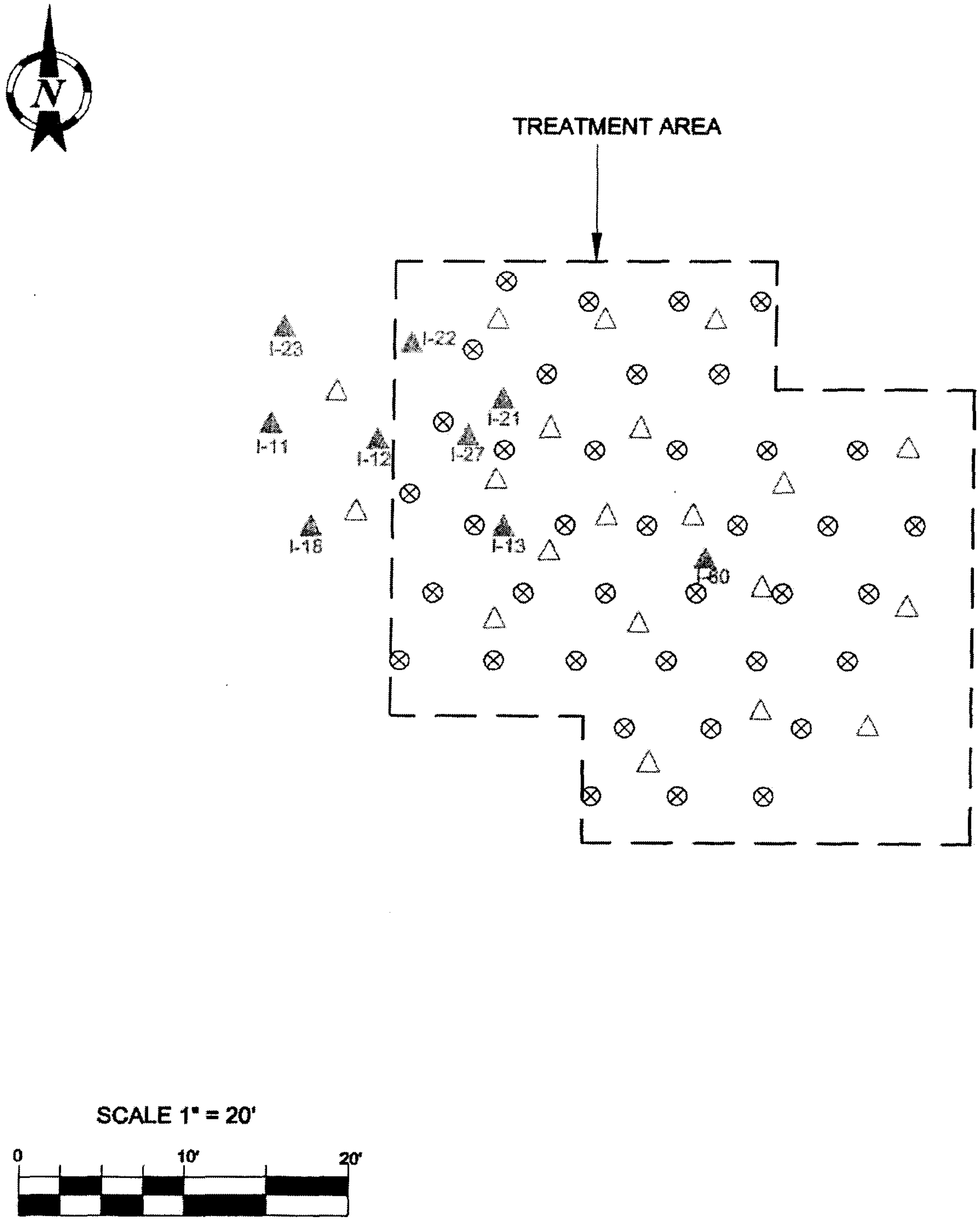


FIGURE 2-3. Schematic of Geo-Cleanse® Injector Mixing Head

Geo-Cleanse® International, Inc.



LEGEND

I-18 ▲	INJECTION WELL LOCATION
⊗	VEGETABLE OIL INJECTION LOCATION
△	PROPOSED INJECTOR LOCATION

FIGURE 3-1	TARGET INJECTOR LOCATION MAP	
NSB KINGS BAY, GEORGIA		DATE: 08/20/01
		DESIGNED: AP
Geo-Cleanse® INTERNATIONAL, INC.		CHECKED: DB
		APPROVED: DB
		DRAWN: AP
SOURCE: CH2MHILL		

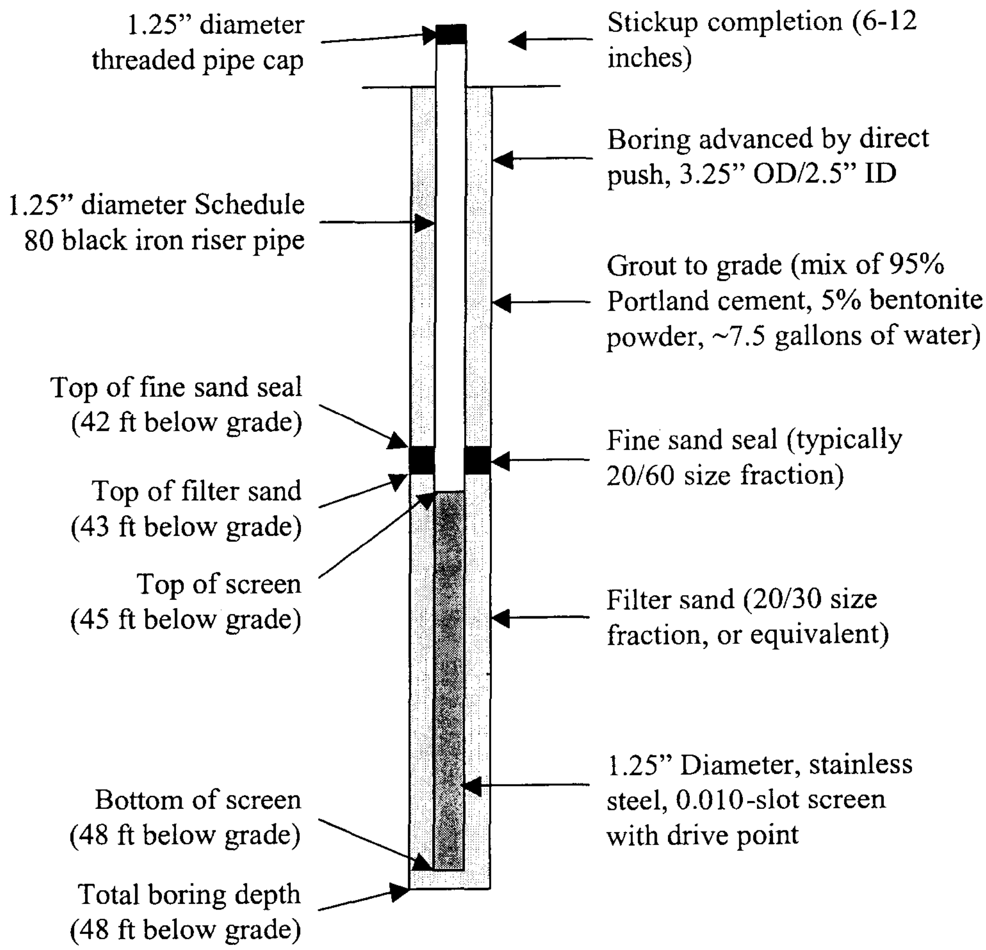


FIGURE 3-2. Example Geo-Cleanse® Injector Construction Detail

Geo-Cleanse® International, Inc.

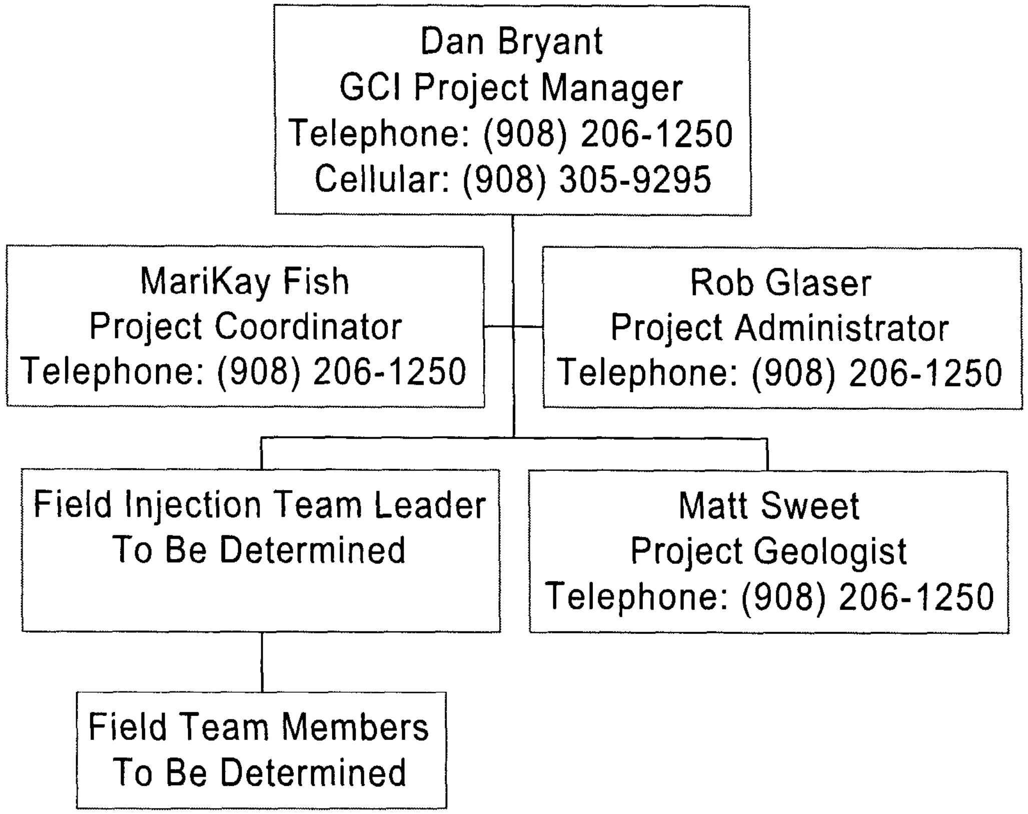


FIGURE 7-1. Project Personnel Organization

Geo-Cleanse®
International, Inc.